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A Link With Our Past

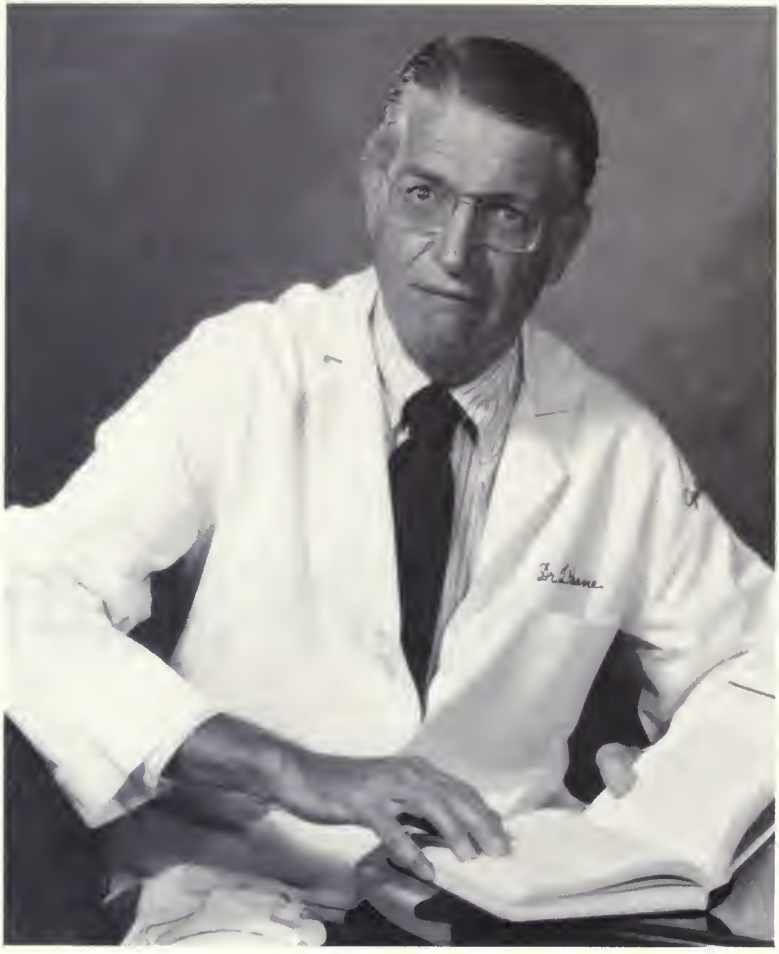
An Interview with

Thomas David Duane, MD

OPHTHALMOLOGY

ORAL HISTORY SERIES

A Link With Our Past



Thomas David Duane, MD
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Thomas David Duane, MD

Wills Eye Hospital and Thomas Jefferson Medical College

An Interview Conducted by
Sally Smith Hughes, PhD, 1988

With Introductions by
Joseph S. Gonnella, MD
Edward A. Jaeger, MD
William S. Tasman, MD

The Foundation of the American Academy of Ophthalmology, San Francisco
Regional Oral History Office, University of California at Berkeley

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Introductions by Joseph S. Gonnella, MD, Edward A. Jaeger, MD, and William S. Tasman, MD

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PREFACE

Ophthalmology Oral History Series

American ophthalmology has undergone striking changes since World War II, not only in terms of basic science, diagnosis, and therapy, but also in terms of its internal organization and relationship with the rest of medicine and with the federal and state governments. Aware of the need to document these changes, the Foundation of the American Academy of Ophthalmology sought a means to preserve the memories, experiences, and insights of individuals who had lived through them.

The result was the inauguration in 1986 of the Ophthalmology Oral History Series, an ongoing series of in-depth interviews with senior ophthalmologists and others who have made significant contributions to the specialty. Aside from providing enjoyment and inspiration, the series' intent is to preserve a fund of historical information which might otherwise be lost and to give ophthalmologists a sense of their discipline's heritage.

In January 1986, an Oral Histories Committee, consisting of William H. Spencer, MD, (chairman), Stanley M. Truhlsen, MD, Susan E. Cronenwett, Patricia I. Meagher, and David J. Noonan, was formed to facilitate collection of the oral histories. A selection subcommittee, with an anonymous membership of three senior ophthalmologists, was appointed to select individuals to be interviewed from nominations by the Foundation Board of Trustees and the Academy Board of Directors.

In selecting individuals to be interviewed, the subcommittee considers the individual's age, prominence in and contributions to ophthalmology, and ability and motivation to participate in the project. As the series expands, an effort will be made to select interviewees from different areas of the country and with different subspecialty interests. Regional subcommittees provide information concerning the local ophthalmologists to be interviewed and assist in fund raising for the oral history series.

Production of the oral histories is carried out by the Regional Oral History Office of the University of California at Berkeley. Sally Smith Hughes, PhD, a medical historian with the Regional Oral History Office, conducts the research, interviewing, and editing, and collaborates with Foundation personnel in final production of the oral history volumes. Willa K. Baum, director of the Regional Oral History Office, serves as consultant. For over thirty years the Regional Oral History Office has conducted interviews with

West Coast leaders in all walks of life and is pleased to have the opportunity to expand nationally to document the history of American ophthalmology.

An oral history memoir is a recorded and transcribed series of interviews designed to preserve the recollections, knowledge, and reactions of a person who has played a significant role in or observed important events. It represents an important way to preserve information and opinions that the narrator alone is able to provide. The transcriptions are edited, reviewed by the narrator, retyped, indexed, and bound with photographs and illustrative material, and placed in appropriate research libraries.

The finished product is both a record of a conversation and a primary research source. It should not be regarded as having the polish and finality of a published book. It is not intended to present the final, verified, and complete account of events. Rather, it reflects the narrator's view, sometimes recounted with partisanship and passion, sometimes with impartiality and objectivity, but always vivid, immediate, and irreplaceable. Accordingly, the views expressed in each oral history are those of the interviewee and are not necessarily shared by the American Academy of Ophthalmology, the Foundation of the American Academy of Ophthalmology, or the Bancroft Library, University of California at Berkeley. These organizations also stress that although reasonable efforts are undertaken to verify the statements of interviewees, the organizations disclaim responsibility for inaccuracies contained in these statements.

Oral history in one sense is an informal art, one that relies on the give and take between two individuals holding a directed conversation. Thus the reader should not expect a studied, impersonal, and invariably exhaustive discourse in the pages that follow. Instead, good oral history offers a view of the narrator and his opinions up close, expressed with the immediacy, appeal, and occasional errors of everyday speech.

The interviews, which are entirely supported by private contributions, are meant for a wide audience. Although the focus is ophthalmology, the goal is to produce documents of broad historical interest through full, referenced, multidimensional biographies.

Indexed and bound transcripts of the interviews are available to readers at the Foundation of the American Academy of Ophthalmology, the Bancroft Library, the National Library of Medicine, and other medical and manuscript libraries. The interview tapes and supplementary material relevant to each interview are on deposit at the Foundation. Oral history volumes may be ordered from the Foundation.

Sally Smith Hughes, PhD
Interviewer-Editor
Regional Oral History Office
University of California, Berkeley

William H. Spencer, MD
Chairman
Oral Histories Committee
The Foundation of the
American Academy of
Ophthalmology

March 1988

INTRODUCTION

Joseph S. Gonnella, MD

Physician, scientist, teacher, Thomas David Duane has been a national leader in medicine for over forty years. Tom's splendid character and unique human qualities have been a positive impact on all who know him and work with him. He has a capacity for easy camaraderie both in his professional relationships and his personal acquaintances. He advises with discretion when asked, cheers with gentle banter and funny stories when encouragement is needed, or lapses into comfortable silence when he detects a need for quiet. Tom inspires affection and respect because his interest is genuine and his concern has always been for the best whether it was in his scientific work, in the care of his patients, or in the education of his medical students and residents. Warm, witty, and wise, Tom is the ideal companion at work and as a friend; and it is about this Tom Duane that I would like to write.

Throughout his career–in research, in helping to establish national research goals and scientific priorities, in giving his students the latest and best information–Tom's interests centered on the care of the eye and the prevention of blindness. Even with his busy schedule, he maintained a private practice, earning him the esteem and gratitude of his patients.

Tom's early research came at a time when supersonic and space flights were in their infancy. He was the first to publish on the effects of radar and microwaves as possible causes of cataracts. He observed and investigated "grayout" in pilots in the 1950s. Later he reflected on the effects of accelerative stress on human tolerance, and the physiologic limitations of performance during acceleration. His later observations included the pathophysiology of the disease of the eye–diabetes, Cushing's syndrome, pituitary tumors, and glaucoma.

Tom's impact on eye research nationally has been immeasurable. Over the years his memberships on planning councils and committees of national medical and ophthalmology associations and as an advisor to NASA and the Johnsville Naval Aviation Center have contributed to the advancement of eye research. His book, *Ophthalmic Research: U.S.A.*, helped to establish the National Eye Institute in 1968. One of his last activities before he retired in 1981 was as a member of the National Advisory Eye Council of the National Institutes of Health where he chaired the Planning Subcommittee and the Melanoma Task Force, making recommendations to Congress and the

scientific community on what is needed in the way of research and priorities in ophthalmology.

Tom served as professor of ophthalmology and chairman of the department at Jefferson Medical College from 1962 to 1981. In the 1970s, Wills Eye Hospital became Jefferson's department of ophthalmology with Tom at its head as ophthalmologist-in-chief.

Tom's flair for leadership–gentle, good-humored, persuasive–his relaxed and easy style undoubtedly smoothed the work of the organizations he was associated with. These qualities also inspired affection and intense loyalty. In 1985 the respect he engendered culminated in the establishment of the Thomas D. Duane Professorship in Ophthalmology at Jefferson and Wills Eye. Tom's easygoing manner does not mask a shallow nature. His convictions and high purpose have always given him the courage to speak out on unpopular subjects when others have kept quiet. His high standards and sterling character would not let him keep still.

His many accomplishments and honors will be amply recalled by others. The principles he followed during his career are revealed by his own words in an address Tom gave to the freshman class at Jefferson in 1972. Talking about the state of medicine, he said, "We are hooked on scientific facts. It is an exciting addiction and in just a few weeks you also will be hooked–and for life." Cautioning that students must balance their scientific knowledge with a genuine interest in their patients, he said:

> *"We are so consumed with reading and the scientific presentations that we simply have no time or alas, no inclination, to listen to inconsequential small talk from our patients. The mark of the real physician is...the one who can help his patient or parents face death. It is the winding up the bed a notch, smiling when you are tired, coaxing rather than ordering nurses. It is the knowledge of when to be human and when to be humble. Beware, it cannot be all empathy and handholding. To do this without a foundation of scientific knowledge amounts to quackery. It you are all bedside manner with no solid basis of fact, your house of cards is sure to tumble..."*

These words probably more than anything sum up the man, his career, and his philosophy of life and service.

Tom's career would not have been so successful nor complete without the companionship and support of his wife Julia, a practicing physician. Since his retirement he is enjoying the accomplishments of his children and grandchildren.

With the zest for activity that has characterized his life, he is still the scholar sharing his knowledge and love of Shakespeare with a class of senior citizens in Bucks County, Pennsylvania.

Tom Duane – friend, beloved teacher, leader, physician, scholar of language and life, we are grateful that he is a part of us.

April, 1989

INTRODUCTION

Edward A. Jaeger, MD

Thomas D. Duane, MD, PhD has left an indelible imprint on twentieth century ophthalmology. He has been simultaneously a teacher, administrator, writer, investigator, and physician. It has been my honor and good fortune to be associated with Tom in many varied adventures and to witness the development and culmination of his distinguished career.

I was a wide-eyed, eager first year resident when Tom Duane was named chairman of the department of ophthalmology at Jefferson Medical College in 1962. We immediately discovered a common background, an interest in the eye and aviation medicine nurtured in the Navy Flight Surgeon Program. What followed was our collaboration on a series of related research projects, but more importantly, a friendship and close working relationship that spans twenty-five years and continues today.

Tom Duane has had a lifelong love affair with education. He places a high value on the need continually to expand one's knowledge, both professionally and culturally. This is reflected not only in his own career but also in his involvement in teaching at the medical student and resident levels, with the American Board of Ophthalmology, and in his strong support of continuing education for the practicing physician. He has had a scholarly relationship with Sir William Shakespeare for many years.

Tom chaired the Jefferson Medical School Curriculum Committee in the turbulent sixties when the demand for relevance and change in medical training was at times vitriolic. His ability to sooth faculty traditionalists as well as strident student leaders was a tribute to his diplomacy and a step forward for medical education.

Tom loves to tell jokes. He may not have made it on the late night talk shows, but every serious presentation deserved a lighter moment. His handsome appearance, Harvard-based diction, relaxed style and sincerity made him at ease and effective whether the occasion were formal boardrooms or evening resident gatherings.

One aspect of his involvement with education that perhaps has not been given proper emphasis was his willingness to provide opportunities in medicine for women and minorities. If the person was genuine, willing to work and get along with people, other qualities or the lack thereof, were of lesser concern.

But his heart was always with the resident group. Tom immensely enjoyed his conferences with the residents, individually or as a group, trying to solve the

problem of the moment. His ability to communicate, understand, and sympathize with those at the resident and ancillary staff levels engendered a mutual respect and affection that remains the hallmark of his career. When an ex-resident or associate calls me, the first question asked is, "How's Tom doing?" Although he could be a very stern disciplinarian, particularly if the issue involved veracity or conduct unbecoming to a physician, all too often he was a soft touch for a resident's sad tale. Tom has taken great pride in his residents, whether their accomplishments are scientific discovery, leadership roles, or the practice of quality community eye care.

Tom has excellent insight into people. His intuitive judgment seldom proves wrong over the long term. His dislike for those with a pretentious and dictatorial attitude occasionally led to uneasy situations with otherwise esteemed colleagues and those in authority. He has a unique, left-sided cerebral gyrus that when stimulated probes, dissects, and questions long-established scientific principles or organizational policy. Often he is on target and this is beneficial, but occasionally not. Perhaps this is his lingering midwest "show me" heritage with a little stubborn streak thrown in. C.S. O'Brien, Tom's chairman at Iowa, remarked at the conclusion of his residency: "Duane, I predicted three years ago that you would be my most troublesome resident and you haven't let me down."

Tom's involvement with student and resident education and his administrative leadership with innumerable policy-making committees represent an intangible legacy of his career. The tangible contribution lies in the loose-leaf textbooks, *Clinical Ophthalmology* and *Biomedical Foundations of Ophthalmology*. Interestingly, Tom initially resisted the position of editor but finally accepted the challenge. The incomparable Duke-Elder series had served the field well for many years but was hardbound and published well before the technologic and informational explosion of the seventies. It was time for a new series.

The development of these textbooks was an enormous task, to which I as an associate and co-editor can attest. It required a coordinator who was knowledgeable, diplomatic, well known and respected, good humored, and blessed with persistence and patience. I don't believe anyone except Tom Duane possesses this combination. The textbooks are a source of great pride to Tom and the editorship was the most difficult position for him to relinquish. He finally realized the baton must be passed, but his sound judgment is still consulted and these books will remain an ongoing literary legacy.

The last few years have been difficult for Tom. The mind remains ingenious, plotting, always inquisitive and demanding, yet he has been frustrated by the inability to pursue the next challenge. He has received enormous support, not only now but throughout his career, from his dear wife Julia. Were Tom to meet Mr. Parkinson at the farmhouse door, he would extend to him a warm greeting, place him at ease with a humorous anecdote and dry martini, denounce his syndrome, then further define and expand its characteristics.

Tom Duane can be very proud of his fine career. His living daily example of integrity, dedication, pursuit of excellence in education, and his now classic textbooks will be passed along through his many students and colleagues. Ophthalmology and medicine have been enriched by his presence.

May, 1989

INTRODUCTION

William S. Tasman, MD

The first time I met the charismatic Thomas D. Duane was in 1962. Little did I know then how often our paths in medicine would meet. How fortunate for me that they did! Coinciding with my return to Philadelphia where I began practicing ophthalmology after a fellowship at the Massachusetts Eye and Ear Infirmary in Boston, Tom began his chairmanship with the department of ophthalmology at Jefferson Medical College. In addition to my staff appointment at Wills, I became a member of his staff at Jefferson. It was a time of new and emerging programs, with Tom in his inimitable fashion actively engaged in building up a department while at the same time continuing his research on pilot blackout. Much of this work was done at the Johnsville Naval Testing Center. Ed Jaeger, who was a resident with Tom at the time, was helping him develop plethysmographic goggles to be used in the research work. What eventually happened to those goggles I'm not exactly sure.

During our exciting beginning at our new jobs, I learned quickly that Tom does not hesitate to say what is on his mind. His decisiveness of thought coupled with drive and directness won him the many successes he achieved, first at Jefferson and later when Jefferson and Wills joined together.

I remember particularly one day in 1962 or 1963 when Tom held a luncheon meeting to consider how his burgeoning department could be made stronger. Somehow the discussion came around to Wills Eye Hospital, which at that time was an affiliate of Temple University. Tom had some very positive ideas about changes that might be instituted at Wills, then located at Sixteenth and Spring Garden Streets. He could hardly have known at that time that ten years later he would have the opportunity to accomplish many of those ideas by planning, relocating, and building a new Wills Eye Hospital facility. As any of you who have been involved with planning hospitals know, such a venture means many chiefs to serve. Somehow Tom managed to make sure that each of the services had input into the design and was satisfied with the result. The actual structure at Ninth and Walnut in Philadelphia is a testimonial to Tom's independent personality. He wanted to make sure that Wills would be recognizable in a distinctive architectural style, resulting in the graffiti-proof modern gray exterior that distinguishes Wills from the many brick buildings in the neighborhood.

Tom has made many major contributions to ophthalmology. In addition to relocating Wills and building a new facility, he also found time to conduct a nationwide study of research in ophthalmology. This was one of the most in-depth studies that had ever been done with regard to research in ophthalmology in the United States, and the fruits of that project led to the establishment of the National Eye Institute. That result and the contributions that have flowed from the National Eye Institute over the last several years, particularly with regard to the very important collaborative studies they have sponsored, can in some ways be traced back to the original study conducted by Tom Duane.

As the founding editor of *Clinical Ophthalmology* and *Biomedical Foundations of Ophthalmology*, Tom put together a loose-leaf comprehensive textbook of ophthalmology that has become a standard in our field. The idea of being able to update this text periodically because of its loose-leaf nature, while at the same time having the book appear as a bound volume, are two unique and practical features of this publication.

Tom, of course, has been a member of many prestigious organizations and has received numerous awards. He has been a director of the American Academy of Ophthalmology, vice-president of the American Board of Ophthalmology, and a two-time winner of the Howe Medal, once from the American Medical Association and more recently in 1988 as the honored recipient of the prestigious Howe Medal of the American Ophthalmological Society in May, 1988 at The Homestead in Virginia.

Of course, in any tribute to Tom, one cannot help but recall that he is a master storyteller with an uncanny knack to drive home a point or message with humor. Over the years, Tom has had much to say about C.S. O'Brien who was his mentor at the University of Iowa. When O'Brien finished his residency at Wills he announced to one of the chiefs, the late Warren Reese, that he was going to assume the chairmanship at Iowa. Warren Reese wondered why he wanted to go so far west to a place where he would find nothing but Indians. O'Brien went anyway and frequently invited Reese to come out and visit. After several years of persuasion and cajoling, Reese agreed to come. When his train pulled into the Iowa City station, all of O'Brien's residents including Tom were there to meet him, dressed of course as Indians. Since, as I have already indicated, Tom is a dry-witted humorist, it seems relevant to include at least this one of many yarns for which he has become famous.

Undoubtedly, Tom is a man of many talents who early in life showed a tendency to be involved in varied pursuits, first as a star running back at Spalding Institute in Peoria, Illinois, later as a boxer, and then still later as chairman of a major eye department and editor of *Clinical Ophthalmology* and *Biomedical Foundations*. Transcending all of these interests, however, is and always has been his love of Shakespeare. When I think of Tom and his passion for all of Shakespeare's works, I am reminded that his generosity and love of mankind is but a reflection of those beautiful Shakespearean sonnets which Tom knows so well.

When he retired as chief at Wills, the staff presented Tom with folios of *King Lear* and Coriolanus. Tom, with characteristic generosity, felt that these treasures should be enjoyed by many people and he therefore donated the folios to the Folger Library in Washington, DC. Currently Tom maintains his interest in Shakespeare by teaching a course at the Delaware Valley College, one more example of how this fine teacher continues to give of himself to others.

Supported throughout his career by his lovely wife Julia, Tom remains a charismatic physician, teacher, humorist, and a gentleman who is the epitome of honesty, proper ethical behavior, and compassion. With that in mind I would like to close with a quotation from Hamlet that I think characterizes Tom for me: "This above all, to thine ownself be true. Thou canst not then be false to any man." That sums up Tom and it is one of the many reasons why to know Tom is to love him.

May, 1989

INTERVIEW HISTORY

Sally S. Hughes, PhD

This oral history of Thomas David Duane is the fourth in a series with prominent figures in American ophthalmology. Dr. Duane was selected for enhancing ophthalmology nationally as well as for his editorship of the loose-leaf *Clinical Ophthalmology* and his pivotal role in the affiliation of Wills Eye Hospital and Thomas Jefferson University Medical School in Philadelphia.

At the outset of the interviews, Dr Duane tells of his Irish/German ancestry and his boyhood in Illinois in the comfortable circumstances made possible by his father's ophthalmology practice. An erratic student who nonetheless gained entrance to Harvard, he did not find anyone to "really wind me up and get me going" until after he graduated and was in his second year of medical school at Northwestern. There he encountered Andrew Conway Ivy, an eminent physiologist who much later strayed into questionable waters by espousing laetrile as a cancer cure. In 1941 Duane joined Ivy's dynamic physiology department, hoping to work on metabolism of the cornea for his master's thesis. Instead he was assigned to a wartime project on blood substitutes. At the end of his senior year, the no-longer-reluctant student was awarded an MD degree and a master's in physiology.

During his internship in 1943-1944 at Evanston Hospital in Illinois (curtailed to nine months because of the war), he met a first-year resident in pediatrics who was "kind of short and had blue eyes." Two nights after their first date, he proposed. Julia McElhinney initially demurred, but not for long. In March of 1944 they were married.

Determined to follow in his father's footsteps in ophthalmology, Dr. Duane was accepted into C.S. O'Brien's three-year residency program at the University of Iowa in 1944. Although he respected O'Brien's ophthalmology, the two clashed: "He [O'Brien] was always needling me and I was always needling him." Despite the demands of the residency program, Dr. Duane managed simultaneously to conduct doctoral research in physiology on corneal metabolism. In 1947 he finished his residency and in 1948 Iowa awarded him a PhD in physiology.

The family, now grown to five, then moved to Minot, North Dakota, where Dr. Duane worked briefly as ophthalmic surgeon in a general clinic. Distinctly unenamored of Minot's climate which kept them closeted indoors with three small children, the Duanes eventually found the home of their dreams, a fieldstone farmhouse built in 1800 on sixty-seven acres in the pastoral beauty

of Bucks County, Pennsylvania. Now with five mouths to feed, Dr. Duane promptly set up practice in nearby Bethlehem.

But a busy practice and the addition of a fourth child in 1952 were apparently not enough. Dr. Duane volunteered for military service during the Korean War and was assigned to the Naval Air Development Center at Johnsville, Pennsylvania. There he did research on blackout, using the facility's giant human centrifuge. In 1960 he took a position as research associate in Dr. Harold Scheie's department of physiology at the University of Pennsylvania. Two years later he gave up private practice for good and, with Dr. Scheie's encouragement, moved to Jefferson Medical College as chairman of the department.

Almost immediately he took an extended leave of absence to travel nationwide, gathering information for Research to Prevent Blindness on ophthalmic research at different institutions. The results of the survey were published in 1965 as *Ophthalmic Research: U.S.A.*, a volume which not only pointed out the need for broader support of ophthalmic research but also highlighted the necessity for a separate eye institute within the National Institutes of Health. In 1966 Dr. Duane found himself amongst the luminaries of ophthalmology, testifying before a subcommittee of the House of Representatives in favor of founding an eye institute. By 1968 the National Eye Institute was a reality, partially contingent on the need made apparent by Dr. Duane's survey.

Upon his return to Jefferson, he revamped the department and also, as chairman of the curriculum committee, sparked the renovation of the medical student curriculum. In 1970 he became president of the staff at Jefferson Medical College Hospital, the first ophthalmologist to be given this honor. Having honed his skills in leadership and conciliation, he plunged into yet heavier political waters—the proposed affiliation between Wills Eye Hospital and Jefferson. The process was not easy: A disenchanted Wills faction had to be courted, Jefferson's interests protected, and the powerful Board of Directors of City Trusts, which managed Wills, placated. On July 20, 1972, the two institutions merged, Dr. Duane continuing as department chairman at Jefferson and in 1973 becoming ophthalmologist-in-chief at Wills.

The problems were far from over: The two residency programs had to be integrated, the new Wills Eye Hospital designed, and the antiquated outpatient department at Wills reorganized. There were other problems as well. "I felt like a badminton bird being batted back and forth between two courts," Dr. Duane admitted. By most accounts, it was Tom Duane's personal attributes—his fairness, his willingness to listen, his sense of humor, his way with people—that saw him and the two institutions through those troubled times.

Dr. Duane's other major task of the seventies was the editorship of *Clinical Ophthalmology*, a loose-leaf which is updated annually and serves as the modern sequel to the Duke-Elder series. To the editor—later Dr. Edward Jaeger became an indispensable co-editor—fell the job of recruiting authors and keeping them on schedule and conforming to the clinical orientation of the book. With typical directness, Dr. Duane remarked: "When I first started as

editor, I thought I would go nuts." Luckily he did not, for *Clinical Ophthalmology* was an immediate and phenomenal success when it appeared in 1976.

A few years later calamity struck on a personal level. A tremor noticed while performing surgery led to the diagnosis of Parkinson's disease, to retirement in 1981 from the appointments at Wills and Jefferson, and to retreat to the farm in Bedminster. There Dr. Duane pursues his wide-ranging intellectual interests, of which Shakespeare is paramount. Despite his infirmities, his sense of humor remains—as the reader of these interviews will soon discover—and he continues to lead a senior citizen seminar on Shakespeare at a local college.

ORAL HISTORY PROCESS

In preparation for the oral history with Dr. Duane, brief interviews were conducted in person or by telephone with friends and former colleagues. The following individuals kindly gave of their time and recollections: William C. Frayer, MD, Joseph S. Gonnella, MD, Edward A. Jaeger, MD, William H. Spencer, MD, William Tasman, MD, Joseph Waldman, MD, and David Weeks. Eight interviews of varying lengths were conducted with Dr. Duane between January 31 and June 20, 1988 on the Duanes' beloved farm, a mile from the village of Bedminster. The winter interviews were held, paradoxically, in the "summer kitchen," the formerly detached building where in the nineteenth century cooking was done in the summer months so that the main house remained cool. Dr. Duane now uses the room as his study, his books and correspondence casually sharing space with the original fireplace, cauldrons, and cooking utensils.

The June interviews, during a heat wave, took place in the screen house, which is flanked on one side by cornfields and on the other by the swimming pool built for the Duanes' children and friends.

The interviews loosely followed an outline submitted in advance. Dr. Duane's approach was informal, anecdotal, frank, and sometimes irreverent. His love of a good story and quirky sense of humor led to frequent digressions, a tendency enhanced nowadays by the effects of the many drugs he takes for Parkinsonism and high blood pressure.

The interviews were edited and submitted to Dr. Duane. Because of his physical condition, it proved impossible for him to complete the editing on his own. Dr. Julia Duane then heroically edited and retyped the entire transcript, reworking certain passages yet preserving the content and her husband's conversational style. We thank her for a true labor of love. Nonetheless, the product is no longer an oral history in the strictest sense of the term. It is shorter, blander, and less discursive than the way Dr. Duane originally spoke it. Despite the reworking, an intensely human voice emerges from these pages—Tom Duane telling it the way he sees it but never taking himself too seriously.

Dr. Jaeger is also to be thanked. As a former colleague of Dr. Duane's at Jefferson and Wills, a co-editor, co-researcher, and close friend, he was a logical candidate for an interview to prepare the interviewer for the sessions with Dr. Duane. In addition, he wrote one of the introductions to this volume, collected photographs, and arranged for Dr. Duane's correspondence and papers to be deposited at Jefferson.

We extend our gratitude to Dr. Joseph Gonnella, vice-president and dean at Jefferson, and to Dr. William Tasman, ophthalmologist-in-chief at Wills. Both provided information for the interviews, both wrote introductions, and Dr. Tasman also served as fund raiser for the oral history.

Dr. Duane's curriculum vitae indicates at a glance his significance to ophthalmology. If his colleagues were asked to single out his major contributions, they would probably point to his impact on American ophthalmology through committee work, *Clinical Ophthalmology*, and to the affiliation of Jefferson and Wills. But the curriculum vitae does not reveal the intangible qualities for which Dr. Duane is equally appreciated—his humanity, his love of people, his directness. On these points, perhaps his final answer in the oral history is most revealing. "What," I asked, "do you consider to be your greatest contribution?" Long pause. "I guess the spirit that I helped instill in the Wills Eye Hospital was about as good a contribution as I could make."

November, 1989

Regional Oral History Office
University of California
Berkeley, California

The Foundation of the American
Academy of Ophthalmology
San Francisco, California

OPHTHALMOLOGY ORAL HISTORY SERIES
BIOGRAPHICAL INFORMATION

(Please write clearly, don't type. Use black ink.)

Your full name Thomas David Duane

Date of birth Oct. 10, 1917 Birthplace Peoria, Illinois

Father's full name Joseph Francis Duane

Occupation Physician Birth & Death dates 1880 - 1943

Mother's full name Alexa Fischer Duane

Occupation Housewife Birth & Death dates 1890 - 1944

Spouse's full name Julia McElhinney Duane

Children's full name Alexa Duane Brennan, Joseph McElhinney Duane, Rachel Duane Lee, Andrew Thomas Duane

Where did you grow up? Peoria, Illinois

Present community Bedminster, Bucks Co., PA

Education Harvard University (B.S.) Northwestern University Medical College (M.S., M.D.) Evanston Hospital Assoc. (Internship) University of Iowa, Residency + Ph.D.
(Undergraduate, Medical School, Internship, Residency)

Occupation(s) Physician

Areas of expertise General ophthalmology, patient care, teaching, research

Other interests or activities Author, consultant, Shakespeare.

Active in which medical organizations? A.M.A. AAO, A.O.S., Am. College of Surgeons, Philadelphia College of Physicians

Other organizations

Dr. Duane being interviewed by
Dr. Hughes in his home,
Bucks County, Pennsylvania, 1988

He hath a heart as sound as a bell,
and his tongue is the clapper;
for what his heart thinks, his tongue speaks.

Much Ado About Nothing, act III, scene 2, line 12.

I. FAMILY BACKGROUND AND EDUCATION

[Interview 1: January 31, 1988, the Duanes' Farm, Bedminster, Pennsylvania] ##

Grandparents

Hughes: *Would you tell me about your grandparents on both sides, please?*

Duane: My maternal grandparents came from Germany. I don't know when. Grandfather Frank Fischer lived in an area which had a spa to which other Germans and Europeans came for its restful, joyful atmosphere. The people there were fundamentally kind and sweet, kind of "laid back," industrious but not "hyper." My grandfather was a big man and had a little goatee which made him distinguished looking. He had a dry goods store, which were quite common in the first quarter of the century. They carried yard goods, linens, sewing materials, underwear, towels, and that sort of thing. He was a good financier, got into the banking business, and became the leader in our community bank in Peoria, Illinois.

My maternal grandmother, Adelaide Kannie Fischer, came from another town in Germany. I don't know when or how they met. She was a strict, forceful person, not very entertaining or pleasant to be around, and I just avoided her all I could. [laughter] She lived right next door to us when I was a teenager. I had three younger cousins who would practice on her piano. She would be sitting on their porch, which was just across a driveway and a tall hedge from my room on the second floor of our house, sewing, and when they hit a wrong note, she would yell, "Falsch!" which annoyed me no end.

This symbol indicates that a tape or a segment of a tape has begun or ended.

My father's father and mother, Thomas Joseph and Bridget Duane, were both born and raised in Ireland. I'm not certain where. My older daughter, Alexa, married a boy, Michael John Bresnan, who was born and raised and went to medical school in Cork, so we visited and traveled around over there on several occasions. The typical Irish merchant puts a large sign over his shop with his name painted on it and sometimes what he sells–but always his name. We were driving through the town of Cashel which is north of Cork and saw a sign saying, "DUANE'S BAR." Of course, I quickly parked the car and we all went in. The owner was out but his two daughters were serving beer. They were lovely young ladies, not like we associate with a bar in the States. I said to them, "What do you think my name is?" They were amazed to hear it was Tom Duane, the same as their father's. Just as we were leaving the father came in. He was a shy individual and rather noncommittal. I guess it wasn't that unusual for him to meet another Tom Duane. Well, anyhow, on the way out of town I did catch a glimpse of a shop with the name "Quirk" on it. My grandma's name was Bridget Quirk so I've felt since then that both my grandparents may have come from Cashel.

Frank and Adelaide Fischer

My grandfather actually was an O'Duane who dropped the "O" when he emigrated to the States at the time of the potato famine in Ireland. He said the Irish coming into the States then were harassed as much as the Jews. If you wanted a good job, you didn't identify yourself as Irish. The Irish were mostly working in the mines of Pennsylvania or on the railroads. Unionism was just beginning, in order to give workers some protection from the bosses.

The mine owners were sinking the miner into deep debt by providing him housing and having him buy all his food and supplies from the company store. He could never leave. He would end up with "black lung" and other diseases about which the mine owners could care less. Some of the mine workers got together and tried to figure out ways to get back at the owners; called themselves the "Molly Maguires" after a similar group in Ireland.

Joseph Francis Duane (standing),
Thomas David Duane,
Thomas Joseph Duane

My grandfather somehow got directed inland to Auburn, New York. I rather think it was because my grandmother's brother, Martin A. Quirk, was there as a parish priest. I don't know what sort of employment my grandpa found there, but he saved enough to send for Bridget Quirk to come over and be his wife. They were married in the late 1870s in Auburn.

My daughter Rachel and I went to Auburn about a year ago and looked at the courthouse records. Their marriage was among those first recorded in Auburn. My dad's birth was recorded as October 12, 1880. He [Joseph Francis Duane] was their one and only for reasons unknown to me, good Roman Catholics that they were. Dad had some schooling there, but sometime the three moved to Peoria, Illinois, again for reasons unknown to me. It probably had something to do with the transfer of Father Martin Quirk to a little town near Peoria. In any event, Grandpa Duane opened "Duane's Tea and Coffee Shop" where he sold imported teas, coffee beans, and spices. Also, during the growing months, he would go out early to the farmers and buy their fruit and vegetables to sell outside the shop. It was a fun place for my sister Valerie and me as kids. The

store had very high ceilings with shelves lining the walls. There were ladders with rollers which we could move and climb up to open jars and boxes which gave off wonderful smells.

I should say something about my Grandmother Duane. She was very intelligent, a hard worker, perfectionist, and a good lady. I think my dad had many of her traits. Grandpa was very pleasant and well-liked. He used to tell me stories about the "finger-lake" country of New York and places like "Skinny Atlas" (Skaneateles), names which I figured he made up.

Father

When my dad got to be college age, Father Quirk informed my grandpa that Joe would be going to Notre Dame and would do it in two years. He didn't think my grandpa had enough money to afford four years. So Father Quirk, who was an erudite individual, tutored my father for two whole summers and frequent weekends, and my dad did a lot of studying. Father Quirk gave my father a lot of books, many of which I still have in my library. He accompanied my father to the admissions office at Notre Dame and told the fellow there–a fellow priest–that he wanted my dad to go through college in two years. The priest said, "Are you nuts? We have a four-year curriculum, period." Father Quirk said the kid was educated and would be bored. So the priest said, "We'll give him a test to see how educated he is." They gave him a test and he got a perfect grade on it. "He's in," the guy said.

My father finished college at the turn of the century and decided to go to medical school. I don't know how they got the money for that, but he wanted to be a doctor, so they provided it.

Hughes: *Where could his parents have found the money? All they had was a little store.*

Duane: It was a pretty big store, actually, and the wealthy people liked to trade there.

Hughes: *Where did your father go to medical school?*

Duane: He went to Rush Medical School in Chicago. It was a good medical school, which closed down for a few years around World War II but has since been revived. Dad graduated in the middle of his class. He wanted to intern, so he went to a hospital in Chicago, which I think was called Alexis Brothers. It was under the aegis of the Greek Orthodox Church.

Hughes: *Does the hospital still exist?*

Duane: I'm not sure. I think so. Well, one day during his internship, Dr. Bertram W. Sippy came through as a consultant in gastroenterology. He invented the Sippy Diet and was considered to be an outstanding gastroenterologist at the start of the twentieth century.

Hughes: What's the Sippy Diet?

Duane: It's a bland diet for ulcers. It's nothing esoteric. Dr. Sippy was impressed with the way my father conducted himself. In a couple of days he called up and asked for my father. When he got him, he said, "Duane, this is Doctor Sippy." My father thought it was one of his colleagues pulling his leg and replied, "Sippy, how is the lint in your navel?" Sippy said, "All right, I guess. I haven't looked at it." [laughter] Then my dad said, "Is this really Sippy?" He replied, "Yes, I guess I'm real. How would you like to come and work for me?" Okay, he'd like to work for him.

Hughes: Now why had he picked out your father?

Duane: He liked how he acted. My father was all business on the job. He had a dry wit and made friends easily.

So my father finished his internship and moved out to Sippy's home which was in South Chicago, a posh neighborhood in those days. He had a lot of servants and sundry help. He had an office in the heart of Chicago where he would see patients, but he also had a huge consulting practice, probably the biggest around, so he was all over the city. He traveled mostly by train. My dad went with him and became quite familiar with the city.

Dad said that the first day they left the house, Dr. Sippy went to a bookcase and took out a big textbook. He removed about one hundred pages and jammed them into his coat pocket, and they took off for the train. He got on the train, sat down, pulled out a page, read it, handed it to my father. My father said, "What do I do with this?" "Read it." He read it and said, "What do I do with it now?" Dr. Sippy said, "Throw it out the window!" So my dad did. They didn't talk at all. They just read books that way. Sippy said he didn't consider that desecrating books. "If a book is full of good stuff, I ought to know it. It doesn't do me any good up on a shelf. I have to know it in my head. If I haven't read the book, I can't possibly know it. If it isn't any good, just don't bother to replace it. If I like it really well, I'll buy the book, put it up on the shelf, and keep it." So my dad kept up his reading. Sippy didn't bother with journals much because they were not erudite.

My father decided that he didn't want to live in Chicago and went back to Peoria. He opened an office for internal medicine and hated it. He once showed me a fellow–we were driving downtown on a Sunday morning–who was sitting on the steps of the courthouse.

He was a nondescript-looking person. My dad said, "See that guy? About fifteen years ago I told him he had about six months to live. I don't have his business anymore." [laughter] I learned a lesson. Don't tell anybody they've got just so long to live!

Since he didn't like the practice of internal medicine, he packed up and took off for Vienna and Berlin where he learned all about eye, ear, nose, and throat diseases from a didactic standpoint. He didn't have an opportunity to practice it. He was *persona non grata* as regards practicing in European hospitals but was welcome to study and observe.

Hughes: *Do you know why he chose that field?*

Duane: Because the lectures were great.

Hughes: *But they were probably great in the other specialties, also.*

Duane: Well, the patient doesn't have to undress for examination of the eyes, ears, nose and throat. They just sit down. Women didn't use a lot of eye makeup in those days, so they didn't have to contend with that like we did.

Eye, ear, nose, and throat was an unnatural wedding because the eye is part of the brain put out in front of the body. The nose is just fastened there. If it doesn't work properly or becomes diseased, it can cause you a lot of trouble, but not like the eyes do. By changes in vision you can tell what is going on in the main part of the brain. So my internist father went back home as an eye, ear, nose, and throat specialist.

Hughes: *Where was he in Vienna?*

Duane: He was at the Algemeine Krankenhaus.

Hughes: *Who were his teachers?*

Duane: Ernst Fuchs.

Hughes: *So he had the best! Was your father in Vienna just for a matter of months?*

Duane: He was there for about two years. He could speak German fluently.

Hughes: *Before he went?*

Duane: Yes.

In the first decade of the twentieth century he went into practice for a time and decided two things: He wanted to get married in 1914, and he was going to limit his practice to ophthalmology. He went back to Europe, and my mother, Alexa Fischer Duane, went with him.

Mother

Hughes: *Tell me about your mother.*

Duane: Mother was ten years younger than Dad. She had a younger brother, Clarence, and the family was relatively well-to-do. She graduated from Trinity College in Washington, D.C. A little over five feet tall, she had very dark brown eyes and black curly hair. She was a happy, friendly, outgoing person, always wanting to help others. She was the typical doctor's wife of those times with a full-time cook and maid. She and Dad belonged to the country club set, partying, golfing, playing bridge, and so forth. I remember she was one of the few women who smoked cigarettes in her day. She loved clothes and had lots of stylish things. She was quite witty, had an artistic bent, played the piano, did a lot of needlepointing. When with Dad in Europe she took piano lessons.

Hughes: *How could your father afford to go back to Europe to study?*

Duane: I don't know. He must have stolen some money somewhere. [laughter] I think he saved up in the practice. He had a very busy one and worked very hard. He was a little short fellow; he was like a terrier. Didn't take guff from any body. He had a sign in his office–I have it in our bathroom–saying, "Do not take yourself too damned seriously." (Our younger son, Andrew, says that is the only thing he wants from our home.)

When Dad and Mother were in Europe in 1914-1915, the war precluded their going to Germany and I guess he had trouble getting into Austria. In any event, Americans were advised to go home. The fellow who eased his leaving was Herbert Hoover. My father got to know him fairly well; said he was a lovely guy. Subsequently, he voted for Hoover when he ran against Al Smith for president. All the good Catholic professionals had a fit when my father came out for Hoover. They said he was a traitor, but Dad stuck up for Hoover, saying that Smith was a hack. Hoover didn't have too much on the ball from a practical standpoint. He was very bright and very wealthy. He did all right as president. He wasn't a crook or anything; he was just kind of grey.

As they returned from Europe, by boat of course, they had some diamond thefts during the passage. My mother who normally had dark skin, really got dark when she went out into the sun. They actually suspected her as the possible thief since she was so dark, smoked, et cetera. She was taken into a room, required to strip off her clothes, and was carefully examined for concealed diamonds! Of course, she wasn't their thief.

Well, Dad resumed his practice of eye, ear, nose, and throat, and got busy right off the bat. My sister was born in 1915 and I in 1917. Around 1922, 1923 maybe, they decided to go to Europe again for Dad to study. We went with them. In Vienna we got a governess from the farm country in Austria. She couldn't speak a word of English and didn't want to learn it. So we learned German. It was easy; we just picked it up right away.

Hughes: What was your dad studying this time?

Duane: Ophthalmology.

Hughes: Why just ophthalmology?

Duane: He became fascinated by the eye; hated tonsils and adenoids.

Hughes: Do you remember anything about his instruction in Vienna? Did you meet any of his professors?

Duane: No, I was only five or six years old. My memories of Vienna are of a gigantic ferris wheel and of a beautiful park where we used to play. The bear's cage was built like a round lamp at the end of a stick. The round part was a big, closed-in roofed area where the bear could go when it was raining or when it wanted to get away from crowds. It was cool and dark inside, I guess. It had windows. The bear would come out and walk down a long passageway with bars so he couldn't get out. He was very friendly so I used to bring him food every day. He loved me. If I went to the back, he would follow me. On a Sunday there would be lots of kids there torturing him, so I would go around to the back, call him, he would come, and the kids would go away.

Hughes: What happened when you came home to Peoria?

Duane: Well, we were over there at least a year. When we got off the ship in New York City, they were having an Armistice Day parade. We stood along the sidewalk watching and speaking German. People around us pulled away as though we had some catching disease.

In Peoria I forgot all the German I had learned, almost flunked it in high school and college.

Hughes: Tell me about your sister. What did she end up doing?

Duane: Valerie, who is two years older than I, had a different circle of friends as we grew out of childhood. We just didn't like the same people and didn't go in the same circles. I know that's not nice to say, but that's the way it was. I might have been at fault as much as my sister. She transferred around several colleges but finally graduated from Stanford. She was bright; just didn't apply herself. She married soon after college—very nice fellow by the name of

Paul Flegel from Portland, Oregon, where he was in the ship-building business with his father. The family was wealthy and influential.

Julia and I took our one-year-old Alexa to visit them about six or seven years after they were married (1946). They had two girls, four and two years of age, and things were going okay. Julia was riding with Paul and Valerie, sitting between them in the front seat about two weeks after we got there. Paul slumped over the wheel with a fatal heart attack. Julia turned off the ignition and steered the car to the curb. Paul had a damaged heart from rheumatic fever and Dad had not wanted Valerie to marry him for that reason, but when you're in love, you don't listen to your parents.

So Valerie in a relatively short time was bereft of a father who died after a lingering illness (primary amyloidosis) in January 1943, her mother who was devastated by untreated hypertension in January 1944, and her husband in September 1946. She became very dependent on her parents-in-law with whom she and the girls lived until 1953 when she decided to move East to be near me. She never remarried, devoted herself to her two girls, who are lovely. Valerie was a very gracious lady, very restless, very unhappy. She tried various jobs, both volunteer and paid, but never stuck with any very long. She died in 1982 of a heart attack which occurred on a commuter bus enroute to New York City from Doylestown, Pennsylvania.

about age 5

Early Education

Hughes: *Let's get back to what happened after you got back from Vienna.*

Duane: Nothing spectacular. I went to grade school, a Catholic school called St. Mark's about six blocks from our home. I rode a bike. Most summers I went to a resort in Wisconsin called Nippersink for about a month with my parents. They had golf, tennis, fishing, swimming, the whole bit. We lived in cabins. We also took automobile trips to various parts of the country with our folks.

I went to a boys' Catholic high school called Spaulding Institute, run by Benedictine Fathers. My high school summers were spent at Culver Academy in Indiana in their naval program. I really liked that, learned to sail and everything.

Hughes: *Did Spaulding offer a good education?*

Duane: And how! Those guys didn't mess around. We had had sisters in grade school who for the most part were good teachers and really nice. Sister Agnes, though, in our seventh grade, was a hurdle everybody had to get over. She was brilliant, tough, and mean. She made everyone use the Palmer method of writing. I couldn't write worth a damn anyway. With the Palmer method you put the under surface of your forearm down on the table and use that as a roller pinion. We would have to make O's or V's all the way across the paper. It would look something like a computer printout. Well, I would do it all with my fingers, which is exactly what they were trying to eliminate. I would take the paper up to Sister Agnes; she would scrunch it up and throw it into the waste basket. We wanted to please her, but she made us stay in at recess and do that damn Palmer method; get there early and stay late. Finally, I did get a Palmer method diploma, but over time reverted to my old habits. People had a hard time reading my writing, and since I have had Parkinson's even I can't read my own writing.

You had to toe the line at Spaulding. I remember one time I was standing at the bottom of a stairway that went up two flights. The first flight had a little platform and then it went on up. On the second floor at the head of the stairs was standing a priest. I didn't see him at all, and about halfway up the stairs I pushed the foot of the fellow ahead of me into the riser so he tripped and fell on his knees and hurt himself. It was a dumb thing for me to do. We got to the top of the stairs and the priest was standing there. He cuffed me right across the ears and side of my face; he slapped me hard. I looked at him–he was about six and a half feet tall–and walked away. [laughter]

Hughes: *How were you doing academically in high school?*

Duane: Pretty well because there were a lot of dumb guys and poorly educated guys. I played some sports in high school–basketball, football. I broke my collarbone my senior year when I was really going to town, and I couldn't play after the first game. So I had an inconspicuous athletic career. I liked all the games. I played them all and credibly well. I was not an awkward guy.

I remember one time when I was still in grade school and on this team sort of coached by a priest. We came back in a huddle and one of the guys said, "Tom Duane used a dirty word." The guy wanted to be sure the priest heard. The priest looked at him and said, "Have you ever said a dirty word?" He said, "Yes." The priest said, "Well, you worry about yourself."

grade school football team, Tom front row fourth from left

My senior year, my father and mother went to Florida. They didn't do that very often, but they did that year just for a rest.

Hughes: *Your father was working pretty hard in his practice?*

Duane: Yes. He always worked very hard. He would get up at five-thirty or six. We had breakfast at seven. Everybody was down, bathed, dressed, and ready to eat. You didn't go down there in your bathrobe with eyes half-closed. When he would drive out of the driveway, back to bed we would go. [laughter] We were down there at breakfast, and we were polite, carrying on conversation. There was no reading of the newspaper at the table.

Hughes: *What was the discussion at mealtimes? Political, religious, any old thing?*

Duane: I really can't recall. They weren't periods that I hated. They must have been entertaining or interesting, but I don't remember what we talked about.

Hughes: *Did your father talk much about what he was doing in his practice?*

Duane: Yes, he did. He loved it, and that's what encouraged me.

Hughes: *Did he take you around with him to see patients?*

Duane: No, he didn't do much of that.

My uncle, Clarence Fischer, my mother's brother, was a family doctor. He was very sympathetic and his patients loved him. He made house calls all over town. He would take all morning. I would go along and he showed me how to drive. I learned how to drive when I was twelve–city driving. It was a good experience, and he really taught me. They didn't have the driving laws in those days that they have now. No license was required. By the time they did establish laws, I was an accomplished driver.

Hughes: *Did he teach you something about medicine as well?*

Duane: No. In those days, general physicians would spend fifty percent of their time driving around to homes. The reason house calls disappeared in the American way of doing things was because the ability to make a thorough examination was precluded by lack of equipment. All in all it wasn't the best way to practice medicine.

As I said, my father died in January 1943 at age sixty-two of a lingering illness, primary amyloidosis, a rare disease that they still don't know how to treat. I was in medical school in my senior year, and right before he died, he said, "I'll see you at the autopsy." My mother died one year later of essential hypertension. They had no treatment for it either. I was in my internship and taking the national boards in Chicago the day she died. She had been out visiting my sister and her husband and baby in Portland, Oregon, when she began going downhill rapidly. Valerie brought her back to Peoria on the train. She died within a few weeks. Both sets of grandparents had died, and the only relatives I had left in Peoria were my Uncle Clarence, his wife (Aunt Mac), and three younger cousins, Clarence, Jr., Steve, and Ann Fischer. When Uncle Clarence died a few years later, Aunt Mac moved to New York City where the three cousins live, so I've had no particular ties to Peoria for a long time.

But before leaving the subject of Peoria, I started to tell you of an experience I had there one winter while my parents were in Florida. My sister was married and gone, and I was all alone. I felt I had to do something, so I decided to enter the "Golden Gloves," an annual amateur boxing event very popular in the Midwest. Although it's for amateurs, a lot of the boxers, especially the colored guys, were pretty tough, inherently good fighters. Well, I went down to the local gym, which was like those you've seen in the movies, with a standard-size ring, punching bags, and sundry exercise units. Guys

were there with guards over their faces, eyes, and so forth. Some of them were really good boxers. They weren't trying to knock you out; they just wanted to see if they could prevent being hit. I went down to this place with a couple of my friends. It was kind of a shabby place and we were a little leary of the fellows we met down there.

I remember one big colored guy who wanted to have somebody come into the ring and defend himself; he wasn't going to hurt him. So I went in and boxed him for a few minutes. When I saw an opening, I clobbered him; knocked him right off his feet and he went down. He started panting–snorting–and his ears got red. I thought he was going to come over and kill me. So I climbed right out of the ring. [laughter] He said, "Come on, I won't hurt you." I said, "The hell with you." I wouldn't get in there again.

I kept sending my father letters, telling him what I weighed. You see in boxing you have to be a certain weight for a certain class. This was the light-heavyweight class. I didn't want to get in with the 250-pound guys. One-seventy-five was the upper limit for light-heavyweight, and that's about what I weighed. My dad thought I was pretty preoccupied with my weight.

summer school student,
Culver Naval Academy

Well, came the big night. The fight was held on the stage of a former theatre in town. My classmates came, sat around, and my fight began. I fought a fellow by the name of Israel Allen, a black who played football for a school that was tough. He was a quarterback on their team, was good, and well-liked. Anyway, I boxed him. The first round, he put his head down and I kept

beating on it. I didn't hurt him at all. In the next round, he came out of his cocoon, so to speak, and tried a few on me–really rocked me. And then I was all out of breath–I was in terrible shape. I hadn't done anything in the gym that was real training. His manager told him, "This guy is leaving himself wide open. You can knock him out." The timekeeper was a patient of my father's, and he saw that I was panting. You are supposed to have one minute between rounds, and he gave me about a minute and a half. Of course, he gave my opponent a minute and a half, too. [laughter] So he came out in the next round and started tagging me. I was running around and didn't know where I was. I was practically unconscious on my feet. So they stopped the fight and he won by a technical knockout. My classmates threw pennies up into the ring from their seats, paying me for my entertainment or something. So that was the end of Golden Gloves.

I met Israel Allen on the street about a month later, and he was very friendly. I was, of course, friendly; I had no reason not to be. We talked about this and that and then I said, "What's in there?" pointing to a case he carried. It was a violin. He used to take violin lessons and was an expert violinist!

Harvard Undergraduate, 1935-1939

Hughes: *You got into Harvard without any problem?*

Duane: Yes.

Hughes: *Your grades must not have been as bad as you implied.*

Duane: I think Harvard wanted to let in boys from the Midwest, instead of whole classes made up of prep school guys from Andover, Exeter, St. Mark's, Groton, all those schools in the East. But those schools prepared them well. I had gone to a plain high school–we did the normal things–but I never had anybody really wind me up and get me going. It wasn't so hard to get into Harvard in those days.

Hughes: *Did you apply anywhere else?*

Duane: Yes, I applied to Princeton, which I think turned me down, and to Dartmouth. But I got into Harvard and decided to go there. I showed up for registration. They took us down to a place called Memorial Hall–hideous dump. It was a Civil War memorial for Harvard men who had died serving in the war. They couldn't have built a worse memorial. It was where students registered, took exams, and did a lot of things. Guys were there trying to sell you laundry service, newspapers, magazines–everything. I decided I would buy nothing. I went back to my room which was right in the middle of Harvard Yard–a beautiful room with big windows, a desk,

looking out on scenes of a constantly changing world. It was really lovely.

I had a roommate assigned to me whom I didn't like very well and he didn't like me. That was the only thing that made it not so perfect. As I sat in my room in walked a lady in a blue dress. She introduced herself and said she would take care of cleaning the room. These women were called "biddies" at Harvard. They don't have them anymore. They lived in the community and passed this job on from generation to generation. They loved it.

Hughes: Did they serve as mothers-away-from-home?

Duane: Well, they had different personalities. This one assumed a role as my protector. After introducing herself, she said, "What are you taking?" I said, "What do you mean by what am I taking?" She said, "Well, what courses are you taking?"

I forgot to tell you! After I picked out my curriculum, I had to go see a proctor who was assigned to me because he was a biologist and I had indicated that I wanted to go to medical school. I found his suite of rooms and the kitchen was full of little clear boxes of beetles or ants. He had been somewhere in Africa collecting these damn things. He was very interested in them; he didn't want to talk to me about medicine. [laughter] So he said, "If you are going to medical school, you must take physics, organic chemistry, and mathematics." I had a compulsory English course. He said, "You've got to take a history course to make you cultured." He signed my course list and I took it back to deposit it at the admissions desk at Memorial Hall.

The biddy said, "Let me see your schedule." I said, "Why do you want to see it? You're cleaning the room." She said, "I know what all of these courses are. Show me your program." So I handed it to her. She looked at it for about two minutes and said, "You'll be out of here by November. You won't last. This is an impossible curriculum. For history you will read about 500 pages a night, and you are responsible for them the next day." She named the professor and said, "He's unreasonable but you've got him. Once you get in there you're hooked." Then she told me about other professors. She said, "You've got to take elementary physics. You've got to take elementary German. You'll have trouble staying here, but you'll probably make it." That's exactly what happened. [laughter]

Hughes: Did you cut down on your course load?

Duane: Sure. I reduced it. I thought it was so simple that no one would have any trouble with it, but I did. I flunked my first two years but was given the opportunity both times to recoup by attending summer school. The first summer I took a couple of courses at

Harvard. My dad went out there with me and studied using the slit lamp at Mass Eye and Ear. The second summer I took a chemistry course at Bradley College in Peoria.

Bradley College had a big campus only a couple of blocks from my home. As young kids we used to go over there and fly kites, leave them up in the air for lunch, and then come back. The wind would just hold them there. Cars couldn't go very fast in the campus area, so in the winter we took our sleds over there, roped them onto a driver's bumper, and rode from one end of the campus to the other. It was fun but dangerous. Every now and then the driver would see us. He'd get out and kick us off.

Hughes: At what point did you decide to major in biochemistry?

Duane: We had to say before midyears [exams] our sophomore year, I think, what we were going to major in, so I decided that I would go into psychology. I didn't know anything about it, but it seemed like a fascinating subject. The head of the department was Professor Boring. He was well named. [laughter] He was surrounded by other bores. Needless to say, I flunked that course and decided to change my major.

Hughes: Why did you decide to major in biochemistry?

Duane: Well, I think I went into biochemistry because I figured it was a basic discipline for medicine.

Hughes: It wasn't that you were particularly fascinated by it?

Duane: No, I wasn't particularly fascinated with it. I didn't like it, as a matter of fact, when I took it. It was better than psychology. I didn't do well in it.

Hughes: When and why did you decide to go to medical school?

Duane: I decided to go to medical school because my father was a doctor. My uncle was, too, but I idolized my father; he was a good guy. He was a doctor; I was going to be one. He took me up to the OR [operating room] once and I got sick; not everyone can stand it. But he said that would go away and it did. It was in emulation of him that I went into medicine.

I switched from psychology to biochemistry and had Jesse P. Greenstein as a tutor. He was very friendly; I never had any trouble with him. He put me down as a mediocre student and didn't challenge me the way he would a smart guy.

So I hung on through my freshman year and went out for freshman football. I made the team. Our team played the junior varsity; these were guys who couldn't make the varsity team. They were good guys and were not there to make football a career. They

played football because they liked it. One person I played against a lot but didn't get to know very well, was Joe Kennedy, the older brother of John who was killed on a flight across the English Channel in World War II. He was the one the daddy was grooming to be president. So they went to his brother John, who was my age but a year behind me in school because he had gone an extra year to prep school. He was an excellent student.

Hughes: Did you know him?

Duane: Yes. He belonged to a club (Pi Eta) that I belonged to. He belonged to several clubs. I only belonged to one.

Hughes: Was it a fraternity?

Duane: They don't have fraternities at Harvard. This was an eating club. We had a stage in the place. It was a large house. I don't know whether it is still in operation.

Hughes: Did you enjoy that?

Duane: Not particularly. Well, I liked some of the guys. It wasn't my idea of a social outlet. I don't know what else to say about it.

Hughes: Did you do any research as an undergraduate?

Duane: Oh, no. I wasn't very much of a student. I didn't think about research.

I had trouble a couple of times. We had to write essays for that compulsory English course. I always wrote in longhand–I couldn't type–I had misspellings, terrible handwriting. I was just penalizing myself–things I'd never do today. But I would just turn them in and they would send them back and give me holy hell. One day the instructor asked us to write an original novel, or rather an outline of one. So I did it and got a fellow to type it for me. It wasn't typical of me at all.

Hughes: You mean not typical of you because it was typed?

Duane: Well, it wasn't my style of writing either, because I hadn't written a novel before. I had this good idea and I wrote. I don't remember now what I wrote.

Hughes: So what happened when you turned it in?

Duane: The instructor made an appointment for me to be at his room at a certain time in the late afternoon on a certain day. I went there and he had a place that was really fixed up. I had not seen any place in Harvard that was like it. It was like a Turkish bath, I guess. It was very gaudy, floor to ceiling drapes. I can't remember his name.

Anyway, his thesis was that I had copied this work from somewhere. He would not dig in and find it if I would cooperate in other ways. I didn't know what the hell he was talking about. He said they had a team of guys in the English department that had magazine articles and everything on tape and he would dig it out and if he found that I had copied this, I would be home the next day. The guy never found anything. It was my original story outline.

I said, "I can tell you right now if you find anything, it's going to be just like Mark Twain said when he went to hear a minister talk on Sunday. "What a wonderful sermon you gave. I've got a book at home with every word just like yours." The minister said, "What do you mean you've got a book at home with my talk in it? These are my original thoughts!" Mark Twain said, "We'll go over to the house and I'll show you the book." The minister came and he handed him a dictionary. [laughter]

Hughes: Anyway, you weren't expelled?

Duane: No.

Hughes: The guy backed down?

Duane: Well, I just never had anything more to do with him. But I did have one guy that impressed me in college. I took a physics course and physics is a hard subject. They took our class–it was a big class–and wanted to put twenty students with an instructor. So we took an exam. I was in the last echelon, the weakest group. I was sure we'd get the dregs for instruction, but we got the most inspiring guy, Edward Purcell, about 6'3", blue eyes, curly hair, and really on the ball in a reserved way. For instance, in our group nobody knew how to work a slide rule; never had seen a slide rule. Purcell was very sympathetic and very understanding and nothing was too much for him. He never made a smart remark or degraded us, and we knew we were the bottom of the barrel. But we finished the course with a passing grade and some understanding and interest in physics. About two years later, he got the Nobel Prize.

My daughter, Rachel, when she was at Radcliffe, was riding her bike one day and saw this couple waiting for a bus or something. She knew it was Purcell and his wife. She stopped and said, "You don't know me and won't know my father, but he often talks about you and is a great admirer of you." Purcell was obviously pleased and said to give me his regards. Well, about three years after he got the Nobel Prize, he was made a University Professor; a University Professor at Harvard can do whatever he wants.

Hughes: He doesn't have to teach?

Duane: He doesn't have to teach, he doesn't have to do research, he doesn't have to do anything, but they do because they're all superlative people.

Hughes: Did he get you to like physics?

Duane: Yes, he sure did, and I continue to like it.

Hughes: But you weren't going to change your major to physics?

Duane: No, that would have been too tough. My field of concentration was biochemistry. You had to take a comprehensive exam at the end of your career at Harvard before you could graduate. This took place about six weeks before the end of school.

Hughes: Was it just in your field of concentration?

Duane: Yes. If you passed your comprehensive exam, you didn't have to take the final exam. So we got our car and golf clubs and away we went–played golf every day. [laughter]

Hughes: Did you pass your comprehensive?

Duane: Yes. I passed my comprehensive just by a fluke. I had notes of various courses that I had taken. The day before the exam I was sitting in my room and a guy came bursting in. He said, "We've got to go up to Salem." I said, "What for?" He said, "Because there is a submarine that sank up there called the *Nautilus* and they're going to blow the guys out. We'll get a boat and go out and really look at it." I said I was studying for exams and just couldn't go waste time watching those guys when I could be studying. "This is my last chance to get out of this." So he said, "All right." And he went up, got a boat, and went out to the scene. He was about ten feet from the first guy that came up. He saw the whole thing and had a wonderful time. I stayed home, studying, and I fell asleep, wasted my time after all. I might as well have been in Hong Kong. But there was one thing I did learn. I flipped a book open and it said how you take an unknown organic compound and make it a known. It's a simple thing, but you would have to know the process.

Hughes: How do you do it?

Duane: Oh, I don't know now.

Hughes: There is a certain sequence of steps that you go through?

Duane: Yes, so I did those steps and found the unknown. I'm sure that whoever graded my exam thought, "He's been doing his homework." So I did pass the exam, just by a millimeter, and I was going to get a diploma. My dad and mother came and enjoyed every minute of

it. They were really proud of me and all that. But I almost deprived them of that joy. About a week before graduation, I was called to the dean's office. He informed me that they had discovered that I was one credit short for graduation. It wasn't as though I was unknown to the dean's office! After all I had flunked the first two years and had had many conferences with them with makeups and so forth. I explained how my parents would never understand such a last minute ruling, how they had made plans to be there for the occasion, how bitterly disappointed they would be. Somehow I got them to overlook the deficiency.

Harvard graduate, 1919

Northwestern University Medical School, 1939-1943

Hughes: *The next step is medical school.*

Duane: Yes. How did I get in? [laughter]

Hughes: *Yes. And did you apply anywhere besides Northwestern?*

Duane: I applied to Harvard, Yale, and maybe some others. I didn't stand a chance of getting in, having done so poorly in college. My dad told me that there were some schools in Chicago that I should try for, including his alma mater, Rush Medical School. So I went there for an interview and met with an old professor whose name I can't remember. When I came into the room, he said something in French and I couldn't understand him. So he said it in German. I didn't understand him then, either. He asked, "Can't you speak any of the foreign languages?" I said, "Well, I took them, but I don't

know them anymore." [laughter] So he didn't think I was worth wasting time on.

I knew that Northwestern's medical school was in the city and I went over there to see the admissions officer. Admissions at that time, just for a couple of months, was run by a doctor, J. Roscoe Miller, who became president of the university. Well, I talked with him at length when I was interviewing. We didn't talk medicine. I hadn't done well in college, but I had some knowledge. [laughter] I wasn't terribly bright, but I had liked English and had had some exposure to authors and so forth. So he said that he would take a chance on me.

We started in September and I joined a fraternity, Nu Sigma Nu. Fraternities had taken over huge mansions on the near north side (near the medical school) which had been built around the turn of the century by the wealthy owners but discarded when the area was no longer the stylish place to live. Our house was jammed with guys. I don't know how we survived. It was wild at times. However, there were times when more professional, studious things took place.

[Interview 2: February 1, 1988]

For instance, we had a visiting professor from the Massachusetts General Hospital, part of Harvard Medical School, visit at the house. I think his last name was Cooper. He talked to us informally. He told us about a case he had. A fellow had what seemed like routine appendicitis, but it wasn't. So he said, "What do you think it was?" I had just read about this the day before. I said I thought it was involvement of Meckel's diverticulum. He was amazed that anybody would know. The next day he was over at the school and he came into our class. He asked something else, to see if anybody knew it, and again I knew it. I forget what it was. He looked at me and didn't say much, but when he got back to Harvard, he sent me a catalog and an application blank for Harvard Medical School! He said I was one of the outstanding students he had seen. I didn't take him up on it, but I felt I was picking up.

Hughes: *Was it because you were getting interested?*

Duane: Yes.

Hughes: *Who were some of the teachers that got you going?*

Duane: I'm going to get to that. Freshman year was all right. We had a nut by the name of [Leslie Brainerd] Arey who taught histology and embryology. He just died. He continued to teach for many many years. I got through histology but had trouble in embryology. I flunked it. You had to have a seventy-seven to pass; I got seventy. So I took a makeup and finished that.

Master of Science under Andrew Conway Ivy

Then I went back for my sophomore year. Now this is a critical period. School opened about the middle of September and a guy came to talk with us at ten o'clock in the morning. His name was Andrew Conway Ivy.

A fellow had moved in with me in the summer. He had gone to Kansas for his first year of medical school–he was from Kansas City–and he didn't like it. His dad was a pediatrician. He pulled some strings and got him into Northwestern. He came toward the end of summer and there weren't many guys around. Since he was a Nu Sig, he came to the fraternity house to live and found me there. We hit it off and went around together. We attended Ivy's lecture. Well, my new friend from Kansas (Hugh Dwyer) said he thought Ivy was the biggest fake he had ever seen. Ivy had had an internship, no follow-up residency or fellowship, and he seemed to have seen every major disease and ramification during that time. Hugh just didn't believe Ivy saw all those cases. I said, "Well, I don't give a damn what you think. This guy has the most going department I've ever seen." He had thirty people working there.

Hughes: *This was physiology?*

Duane: Yes, general physiology. He lectured in a small room. You would sit anywhere you could. People brought their lunch. He talked informally. There were discussions of everything–sex, science. Ivy didn't want women around. Every once in a while a woman would come and sit in with her lunch and he would tell dirty stories just to get her out of there. I didn't admire that so much. But I wanted to do research, and he was the guy to direct it. So I went to see him and I said, "Can I get a master's degree in physiology?" He said, "Sure. You've got to do the work." And I said, "Well, I'd like to." So he took me back into the lab and we went into one guy's room, a big room. He was a professor of physiology and he wasn't worth a damn. He didn't have any original ideas; he was just a nuisance, and Ivy was trying to get rid of him.

Ivy assigned me a six-foot area with shelves, water, and everything. I went to his office and asked, "How long will I have to do this?" He said, "Well, it's up to you. If you get results, complete some special courses and the exam, then you've got the degree. What are you going to work on?" I said, "I'm eventually going into ophthalmology and I'd like to work on an ocular problem. I'd like to work on the metabolism of the cornea."

Hughes: *What had given you the idea to work on the metabolism of the cornea?*

Duane: I thought it was something that was not known and would have a lot to do with anesthesia of the cornea and disease of the cornea.

Hughes: Had you been doing some reading in ophthalmology?

Duane: Oh, yes. I did it in preparation for going to see Ivy.

Hughes: Wasn't it a bit unusual for a second-year medical student to be doing a research project?

Duane: It wasn't unusual in his department. He worked nights, Saturdays, Sundays; the place was humming. He was a leading spirit. He was no fake in my eyes. I admired Ivy; he worked hard. He went down to Washington, D.C. a lot. But he did make mistakes–no one is perfect. There were two mistakes that he made in my mind. One concerned the Nuremberg Trials; the other, the laetrile business.

Hughes: He wrote a paper in 1948, "The history and ethics of the use of human subjects in medical experiments," which resulted from his work in Nuremberg.

Duane: Yes.

Hughes: Did Ivy talk to his students about questions of medical ethics?

Duane: Not particularly.

Hughes: Why had he been involved with the Nuremberg Trials?

Duane: He was one of the most prominent scientists in the country. He had been made head of the Chicago Medical School branch of the University of Illinois and had acquired a lot of titles thereby. He was also Distinguished Professor of Physiology. I said, "I think you are going to be an extinguished professor." [laughter] He liked that.

Hughes: What was he doing in terms of research when you were there?

Duane: He had some umpteen professors and students working on his projects. He was working primarily on gastroenterology subjects. Anyway, he told me I could not work on metabolism of the cornea.

Hughes: What was his reason?

Duane: He said, "I have just been appointed consultant to the Surgeon General of the United States Army and Navy." He said it was not germane to things that they wanted to know [during the war], and so he was not going to sponsor it until we won the war and had the latitude and freedom to do what we wanted.

Hughes: He thought you should have a war-related project?

Duane: Yes. He said I should work on the toxicity of gelatin as a blood substitute. And I did.

Ivy would go about every two weeks to Washington, D.C. and he had a million things he was working on and doing in Washington. I would go see him periodically, show him some interesting results I got, and he would grab the papers and go. He did that about three times till I finally thought I was not going to have a thesis; he'd taken all the papers. So I raised hell with him, in a polite sort of way.

Hughes: Was he taking them to Washington?

Duane: Yes. And there were a lot of other papers that were going to Washington, and these were getting lost.

Hughes: He was advising the Surgeon General?

Duane: Yes. Here's what happened. I didn't know anything about publishing papers and he did. I had been trying to get my data together to write a paper, and I couldn't do it. So I finally wrote my thesis on about a third of the work I did.

Hughes: You couldn't do more because he had so much of the information?

Duane: He would take my data and put them some place. I'd ask him, "What are they doing on blood substitutes?" And he wouldn't tell me.

Hughes: Was he trying to stall you? Or was he just disorganized?

Duane: He was just disorganized, I think. He was not vicious or dishonest. He wouldn't mean to take anything away from you, but he would lose it. So I tried to find out what they were using for blood substitutes, but he looked at me like I was a spy or something. So I still think what they used was gelatin. It has a low molecular weight; it's not nearly as big as dextran. I think some people were working on its effectiveness in shock. Others were working on how it permeated the various tissues. I didn't have access to this or anyone to talk to about it except Ivy. If he wanted to talk about it, he would. I finally got to my senior year and took an oral exam to get my master's degree. He only came for part of it.

Hughes: He was just too busy?

Duane: Yes.

Hughes: How did the oral exam go?

Duane: Fine.

Hughes: Who else was on the committee?

Duane: I don't remember. But the fellow whose lab I had space in, was on it. He had a fit because I spelled hemorrhage one way on one page and another way later. [laughter] That was his only comment.

Hughes: Was there a third person on the committee?

Duane: Oh, yes. There were about six.

Hughes: Were they all physiologists?

Duane: All but one, and he was an anthropologist. He asked me a question about a membrane inside the vitreous cavity in animal eyes. I happened to know what it was and he got off my back and never asked me another question.

Hughes: Now let's backtrack. It was Ivy's idea that you work on gelatin as a blood substitute. Did he tell you why?

Duane: Yes, he told me in broad terms.

Hughes: Can you remember what those were?

Duane: I knew that it had to do with substitute blood and I knew that at an aid station you couldn't take a sample of blood and do a cross-match. You had to have something to give to keep the patient alive.

Hughes: To give them right away?

Duane: Yes.

Hughes: Did he explain why he chose gelatin?

Duane: Yes, because somebody found out that it was innocuous if it was given intravenously, and it was cheap and easy to sterilize.

Hughes: What is the significance of the fact that gelatin has a low molecular weight?

Duane: Well, it doesn't want to be too low or it won't have an osmotic effect. But it did have an adequate osmotic effect, I *think*. You see, I was working at this piecemeal; I didn't have the whole job schedule in front of me. It would take a couple of guys to do it. I worked at night.

I remember one night I was in the lab drawing blood from six dogs about every three hours or so. The building had classrooms, labs,

and a library on the upper floors. The lower floor was lockers, restrooms, lounges, and so forth. I was getting weary drawing blood from those damn dogs so I went down to the lounge to sleep after the midnight and three A.M. injections. The nightwatchman saw me and called, "Halt!" It was dark and he said, "Who the hell are you?" I told him who I was. He said, "Well, why aren't you up on the physiology floor?" I said, "I'm going to get a little shuteye." He said, "Well, you don't belong down here. I might have shot you." I had experiences like that, but I got through.

Hughes: *Was Dr. Ivy participating in this research in any way?*

Duane: No, not physically. He would just take the results. I would have a bunch of data sheets and he would take them away. I figured he would give them back, but when I asked for them back, he said he didn't have them.

Hughes: *So does this thesis have missing parts?*

Duane: The thesis is intact but represents only part of the total work I did.*

Hughes: *What was your conclusion?*

Duane: Gelatin is a relatively innocuous blood substitute in dogs. It was worthy of study in humans, as an emergency temporary agent.

Hughes: *Do you think the information from your research was actually applied during the war?*

Duane: I became so busy with other things that I didn't try to follow it up. I've been quite frustrated since my retirement trying to get information on its use or nonuse. It seems to me in this day of problems with hepatitis and AIDS in blood donors, that it might have some use.

Henrotin Hospital, Chicago

Duane: What I haven't told you is that about the end of my sophomore year of medical school, I joined some of my classmates and we went to work at Henrotin Hospital. It was located on the near north side of Chicago about six blocks from a very active police station and seven or eight blocks from Passavent Memorial Hospital belonging to Northwestern University where the well-to-do were hospitalized. Henrotin got the trauma trade. We manned this hospital as externs, assisting in surgery and covering the emergency room. When patients came in with medical problems, we'd look them over

* Duane TD. Studies on the toxicity of gelatin as a blood substitute. Master of Science Thesis, Department of Physiology, Northwestern University, 1944.

and then go into a back room where we had a Merck manual and find out what to do. It was a very busy place. We sewed up many wounds, set broken bones, took x-rays, pronounced people dead, et cetera. It was a great experience. Remember, this was during the war when most hospitals were short of MDs. Every now and then, we would be in trouble.

asleep during clerkship, Henrotin Hospital, 1943

Once I treated a man who was drunk; he had been hit walking across a street by a car. I sewed up a laceration and he seemed okay to let go. A few hours later we heard he was dead. His wife lived in California and came east for his burial. They had a coroner's inquest, and since I was the "surgeon" on record, I had to appear before it. The civilian coroner asked me if I had sewn him up. I replied, "When he came in, he had a cut above his eye which I sewed up." He asked, "Would that kill a person?" I said, "No." He asked, "Would the hemorrhage two hours later kill him?" I said, "He wasn't hemorrhaging when I saw him." He said, "Well, he died of a hemorrhage." We hadn't seen the autopsy report, but he wasn't in any jeopardy when he left the hospital. He had been there about an hour and a half. The coroner said, "Let me ask you something. If you were on duty in the hospital right now and this man came in and you sewed up his cut and he had a history of having a hemorrhage, would you let him go?" Well, if I said "yes," it would appear that I was callous, and if I said "no," that I was incompetent. "Let me ask you something first," I said. "You walk down the street and a crazy man standing on a roof pushes a rock off as you walk by and it hits you on the head. When you recover and are asked, If you knew that fellow was up there, would you walk down the street?' What would you say?" He said, "You're a fresh young punk!" and he gave me holy hell. However, the victim's wife talked to the head of the hospital, thanked him for our service, and absolved me of blame in her husband's death. I guess the coroner dismissed the case, too. Anyway, nothing further came of it.

Internship, Evanston Hospital, 1943-1944

Hughes: *Why did you choose Evanston Hospital for your internship?*

Duane: By the time I was ready for my internship, I was rather tired of seeing trauma and the sordid side of life. Our obstetric service in the senior year was a six-week period at the Chicago Maternity Center. It again was good experience but it consisted of teams (resident, obstetrician, and senior medical student) delivering indigent women in their homes. We would be on call from a central office. If it were a known multip [multiparous], we were on our own, setting up the birthing area (we carried a stack of newspapers to cover the floors and furniture because of insects and filth), and making use of family or neighbors, who might or might not be useful. One had mixed emotions with these deliveries–elation in safely helping a new being into the world but despair about the probable future of the baby. One black mother giving birth to her seventh or eight child, a girl, couldn't think what to name her. I suggested she call her "Alexa," my mother's name. She asked me to write it out for her. I wrote it in large letters on the wall. I also wrote it on the birth certificate, which we were required to fill out before leaving. I've often thought about that time, especially since we named our firstborn, Alexa. A couple of years ago I learned that there is a young black neurosurgeon practicing in the Midwest whose first name is Alexa. I hope to find her and ask about her origins.

Well, I was ready to see a better side of medical life so I went to Evanston. It was a sought-after internship; it wasn't easy to get, but I knew people there and got it. It was a busy, general hospital. It wasn't a push-over internship. I worked long hours.

Our room, by chance, happened to become the center of social life for the interns and residents. There were always guys in our room with the lights on, card table out; guys who weren't on duty were drinking beer and playing cards. I got so I could sleep through any noise. Once when making rounds with the head of obstetrics, we went into the room of a woman who had delivered a fourth child. Women were kept in the hospital about ten days after childbirth in those days. He asked her if she were bored. She said, no, that she enjoyed watching the psycho ward across the way. He looked at me and said, "Do we have a psycho ward?" I said, "No, sir." He said, "What is she talking about?" I said, "The interns' quarters." [laughter] She saw guys with straw hats, in their underwear, playing cards and horsing around in my room and concluded they were nuts. We kept the bathtub filled with ice and beers and cokes so when you were off duty, it was the place to go.

Hughes: *What services did you go through?*

Duane: I don't really remember: pathology, surgery, medicine, pediatrics. They had instituted the nine-nine-nine scheme at that time. Do you know that?

Hughes: *No.*

Duane: Medical school years were placed on a nine-month year-round basis so that they could graduate more doctors. Internship was limited to nine months, then you were to go into military service. However, there was sort of a lottery concerning military service versus residency training and I was lucky enough to be deferred for the residency.

Julia McElhinney Duane

Well, to get back to the internship services: Pediatrics turned out to be the most important for me. Evanston Hospital farmed us out for a couple of months for pediatrics to the Children's Memorial Hospital in Chicago. Two of us went at a time. The day we arrived, the head resident told my colleague that he was to work on the wards for the first half of the time while I worked in the out-patient clinics. During the mornings we all attended rounds so that we knew the in-patients when on call every other night. We had very nice living quarters there, but the food in the doctors' dining room left much to be desired, so we tended to go back to Evanston Hospital on our nights off.

Clinic patients started being seen around ten in the morning. There was no particular follow-up on individuals. They were seen in rotation by whichever clinic doctor was available. It came noon and I was working away when I realized three patients were waiting to be seen who had been sitting there quite awhile. Doors to examining rooms were open with no one in sight–neither doctors or patients. So I asked the head nurse where everybody had gone. "To lunch," she said. "How do you get to lunch?" asked I. "Never mind," said she. "The last doctor here continues seeing patients until relieved for late lunch." So I continued on doing the best I could, when all of a sudden the door opened and in walked my future wife. (I didn't know it then.) She had blue eyes, was all business, and said she would take over for me while I went down and had lunch.

Hughes: *Was she an intern?*

Duane: No, she was a first-year resident, soon to finish, as a matter of fact. She was my age but had had only two years of college before medical school and got ahead of me.

Hughes: How did she manage to go through college in two years?

Duane: She had been valedictorian of her class in high school in a small Iowa town by the name of Washington. The University of Iowa offered a six-year combined B.S. and M.D. degree program which her brother Tom, two years older, was enrolled in. She was the middle of five children of a widowed mother, and college expenses were an important consideration. The medical school dean (Ewan MacEwan) had a reputation for discouraging the application of women to medical school, but somehow she was accepted along with five other women in an entering class of about 115.

Well, that evening I went home to Evanston Hospital on the train, about a half-hour ride, in time to eat dinner there. So we sat at the table and they asked about baby so and so, this nurse, that doctor, and finally, I said "What's with that girl who is kind of short and has blue eyes?" "Oh," they said, "forget her. She's engaged."

A couple of weeks later I was having dinner at Children's along with a few other doctors, including Julia. It was a blistery hot night and they didn't have much air conditioning in those days. So I asked Julia if she'd like to go for a walk in Lincoln Park, which was nearby. In those days you didn't have to worry about mugging and such. Well, we took a walk and I was making small talk. I said, "I hear you are engaged." She said, "No. I've called it off, but I haven't made it general knowledge." I said, "Well, I'll respect your privacy," making a mental note I was going to move in. [laughter] About two nights later, after a long talk over dinner at a restaurant, during which I discussed my long-range plans, I asked her to marry me. She thought I was crazy, impetuous.

She left shortly for Cincinnati Children's Hospital for a second year of residency. This was to start August 1 after a two weeks' vacation, during which she went to California. I finished out my internship and we kept in touch mainly by letters. We got together in Chicago at Christmas time. I was to start my residency at Iowa City in early February [1944]. I bought her a diamond ring that I wanted to give her as an engagement, but she declined to accept it. Said she didn't think we really knew each other well enough. I was really hurt and back she went to Cincy and I went back to Evanston to finish my internship. I didn't give up, and after my mother's death in late January, and after settling in Iowa City a few weeks later, I wrote her saying, "I'm coming to Cincinnati to see you this weekend. I'm bringing the ring along. You are to put it on and wear it or forget it." That brought a phone call from her, saying that she had been very busy with a meningitis epidemic but she

wanted me to come and bring the ring. So I did. That was around the first of March.

Then back in Iowa City about three weeks later, I was working in the clinic and got a phone call from Julia. She was at her mother's home in Iowa City. Her mother was in California. Julia had been sent home for a week's rest to recover from mumps, which can cause serious complications in an adult. So she was resting when I came over after clinic hours. In the course of the evening, I asked, "When are we going to get married?" She said, "How about tomorrow night?" It was okay with me! We were married two nights later by M. Willard Lampe, head of the religion department at the university, a longtime neighbor of Julia's. It was a brief ceremony. I thought the reverend was giving us a practice run-through when I suddenly realized it was the real thing! Mrs. Lampe provided some refreshments afterwards, including a cake, which was very nice. That was almost forty-four years ago.

Julia McElhinney (Duane), 1943

We were married on Wednesday evening and the following day I asked Dr. [Cecil S.] O'Brien if I might have the weekend off. Residents were expected to attend rounds every morning of the week at eight o'clock. I explained that I had just been married and my wife was returning to Cincinnati on Sunday. He was silent for a few moments and then said, "You have hardly been here long enough to be asking for time off. I'm not in favor of your being married at this time, but I guess that is really none of my business. Well, go ahead." So after clinic hours on Friday afternoon, we drove into Chicago and spent two nights at the Drake Hotel.

Julia was asked to stay on in her residency for an extra three months as chief resident to facilitate a nine-month program for the

next chief-to-be. Since I was so locked into appearances on my job every day of the week, she made a couple of weekend visits to Iowa City in that six-month interval before she finally joined me in October.

University of Iowa, 1944-1947

Residency under C.S. O'Brien

Hughes: *When and why did you decide to specialize in ophthalmology?*

Duane: I had decided that I would do that if I went into medicine. I had fully decided to go into medicine by the time I went to college.

Hughes: *That was the influence of your father?*

Duane: Yes, it was exclusively the influence of my father. I include his friends; I liked the people whom I saw that were ophthalmologists. So that was the basis of the choice. As a matter of fact, when I edited the loose-leaf series, *Clinical Ophthalmology*, I dedicated it to my father: [reads] "In grateful memory of Joseph Francis Duane–parent, ophthalmologist, inspiration."

Hughes: *Why did you choose Iowa to do your residency?*

Duane: Well, Iowa City was about the same latitude as Peoria. It was about one hundred miles away. I liked the layout of the campus. I liked the medical school; it was the newest building there. Iowa City is a very attractive place to live. The pace there was much slower than Chicago, which appealed to me.

Hughes: *Did you know much about the residency program in Iowa?*

Duane: Residencies are like ball teams. They have their fans. Iowa was known as a very good residency. It was supposed to be particularly good for surgery. You don't know much about the program any place until you get there. I heard it had a very good chief by the name of O'Brien who had trained at Wills [Eye Hospital]. He was respected throughout the country.

I wrote to him–I wrote to all the places I considered going–and asked if I could work for a PhD while I was there. I thought that in an eye residency you probably don't do clinical work one hundred per cent of your time and that you could do research if you put yourself to it. O'Brien wrote me back a flowery letter and said he had two guys who had done that already and he was all for it. He said that he would be away for a couple of months starting in December, but if I decided to come to their residency, he would help me in that area when he returned. Ordinarily, residencies run from

July through June but the nine-month schedule was changing that. My residency was to begin in February [1944].

Hughes: Where did you apply other than Iowa?

Duane: I applied to Mayo's and to Mass [Massachusetts] Eye and Ear and to a couple of others, but I just can't remember which. I didn't get into Mayo's. They wrote me back well after I had started at Iowa, saying that they didn't have room for me. [laughs] Again, I think the nine-nine-nine program confused things. I was accepted at other places, but I wanted to go to Iowa.

Hughes: Why?

Duane: Because C.S. O'Brien was there; it was a department in its own right, not just a service; it had an excellent reputation across the country; and I could do my research there with a man by the name of Bill Robbie.

Hughes: Did you know about him before you went?

Duane: I knew his work.

Hughes: What was he interested in?

Duane: Biochemistry of the cornea.

Hughes: He was an ophthalmologist?

Duane: No, a researcher, a PhD.

Hughes: A physiologist?

Duane: He was a biochemist or a biophysicist or something like that. He worked in the physiology department.

Hughes: Tell me a little about C.S. O'Brien.

Duane: Well, I went around to say hello to O'Brien and he made some derogatory remark, so I gave him a wide berth. I went to watch him in the operating room. He did one operation and I told him I thought it was well done. He said, "Well, you don't know a damn thing about it. You are not even an ophthalmologist yet." That discouraged me from complimenting him. He was always needling me and I was always needling him.

My two closest friends were Samuel N. Key and Otis Lee, senior residents. They were very bright guys. They taught me most of my ophthalmology. They knew how to handle O'Brien and were in his good graces. If I wanted to do something different, I had to work through them because O'Brien wouldn't give me approval. He asked both of them to stay on and be his assistants when they were

finishing their third year of residency. Both of them had other plans and gracefully got out of it.

O'Brien was a very wealthy man who played hard but worked hard. He was of medium height, trim, and always well-dressed. He wore pince nez glasses for reading. His first wife was killed in an auto crash, leaving him with one daughter. He had remarried when I came on the scene. The second wife was the widow of the man who founded the Burdine department stores in Florida. They had a country home furnished lavishly outside Iowa City where they threw an annual bash for the residents and professional staff, sans women, with much good food and liquor. O'Brien was a congenial host at these affairs.

On one of these occasions, I "over-did," passed out, and ended up spending the night. I did a bit of vomiting and tried to remedy matters by taking the soaked bed linens and towels home to my wife to launder, which she did not appreciate. The O'Briens spent as much as three months during the winter in Florida every year, despite the shortage of staff and the other restrictions due to the war.

Hughes: *Can you tell me what the residency consisted of?*

Duane: It was a hospital-oriented program. That is, there was not a general walk-in clinic, as in larger cities. There was a shortage of doctors my first couple of years because of the war. We learned mostly from the residents who were ahead of us, which could have been worse. The patient load was much less than that of a large city residency, but each patient was carefully worked up. We had referrals from all over the state. The University Hospitals had a unique service. Transportation was provided by ambulance or station wagons throughout the state for anyone who needed it. Of course, postoperative care was far different in those days from now.

Dr. O'Brien was a competent diagnostician and surgeon but he didn't know anything about indirect ophthalmoscopy, which was not unusual for the leaders of his time, I guess. He definitely called the shots. Each morning at exactly eight o'clock, the entire ophthalmology staff consisting of six residents, the two or three faculty members (P.J. Leinfelder, Ken Swan, Jim Allen), clinic nurses, and so forth, would line up according to rank in a very large room, which contained our individual desks around the periphery and a reclining chair on each side of a central station containing small instruments and sterilizing equipment. Here we would present patients to Dr. O'Brien with history, findings, impression, and plan of treatment. He would then examine the patient and agree or disagree. If he disagreed, we didn't do it. Then we would all make rounds on the inpatients.

Dr. O'Brien had his private office right next door to this large clinic room. If you felt you had an emergency that couldn't wait until the

next morning, you would have to have him see the case if he were in town. I had such a case one day about two o'clock, went to his door and gently knocked, and asked if he would come at his convenience and see it. About three-thirty he came in. He looked at me and said, "I can't just drop everything and come in here when you call me." I said, "Dr. O'Brien, I know what you're up against. I'm not complaining." He went on to say, "Well, I just can't do it and you ought to know that." I said, "I know it. I am not saying a thing." He said, "No, but I know what you are thinking." [laughter] I said, "Are you going to bawl me out for that?"

Hughes: *Did you get along with the other people in the department?*

Duane: Oh, yes. With the nurses, I got along very well. [laughter] I got along fine with my fellow residents and the other staff members. Philip Knapp came to Iowa for his residency in about 1947 after serving in the Navy during the war. We had great times playing golf and getting our young families together; that friendship has persisted through the years.

residents, ophthalmology, University of Iowa 1944
Front row: Frank Brown, C. S. O'Brien, Sam Key
Rear row: Otis Lee, Tom Duane, Manual Quieroga

Doctoral Research under Harry N. Hines and William A. Robbie

Hughes: *You were doing the PhD research simultaneously with your residency?*

Duane: Yes.

Hughes: *On the metabolism of the cornea.* Were you working on that project by yourself?*

Duane: No, I worked with Robbie.

Hughes: *Tell me about him.*

Duane: Well, I don't know where he trained. He was smart as hell. He loved research and encouraged others to work in it. He was very respected. Dr. O'Brien helped pay his salary, so I worked under him. He had an unusual physical build. He was tall and angular and rather stooped. I think he had a chest concavity and he held his head twisted somewhat to the side, perhaps because of an exotropia. He was such a lovely guy, one wasn't conscious of those things after a bit. He was probably in his late thirties or early forties. He died many years ago, but I can't remember why.

Hughes: *Who was Harry N. Hines?*

Duane: He was professor and chairman of the physiology department of the medical school, the equivalent of Ivy, a nice guy. He was a homespun character, an earnest teacher. He looked more like a butcher than a professor. The medical students had nicknamed him "Butch" accordingly, but he was held in high esteem.

Hughes: *Was he interested in your project?*

Duane: Oh, yes.

Hughes: *Did he actually do anything in connection with your project?*

Duane: No.

Hughes: *Was that just* pro forma *to put the chairman's name on a thesis?*

Duane: Yes, well, you give him thanks. He provides you space, equipment, janitorial service, and so forth. You are indebted to him.

Hughes: *Did Robbie take a more active role?*

Duane: Yes. He did a lot of the technical work with me. He was a good biochemist. There were some things I was going to do for the MS [degree] that I didn't get to do because of the gelatin blood substitute project. I could do them at my leisure at Iowa. It did involve working on Saturdays and nights, however.

Hughes: *Please summarize that work.*

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* Duane TD. Studies on the metabolism of the cornea. PhD Thesis, State University of Iowa, Iowa City, June, 1948.

Duane: Well, I first reviewed the literature on the metabolism of the cornea. Dr. Alan Woods of John Hopkins had pointed out the importance of understanding the metabolism of the cornea if we hoped to treat it when it is injured or diseased.

Using bovine, rabbit, and cat eyes, I studied the hydration of the sclera and cornea by weighing them in the fresh state and in a dehydrated state. Hydration of the sclera varied greatly within and between species, whereas hydration of the cornea was a relatively constant thing. Dave Cogan and Everett Kinsey had postulated that the cornea is protected on both sides by semipermeable membranes which account for its transparency in the normal state. Injury or disease can interrupt this process, giving rise to opacities. Peter Kronfeld had also had similar thoughts about it, but until my work there had been no experimental substantiation of their ideas.

Preservation of corneas for scheduled transplants was of great importance because to be successful the corneas had to be as healthy as possible. I studied the respiration of bovine corneas as their respiration is virtually the same as human corneas and fresh eyes were readily obtainable at a slaughter house in nearby Cedar Rapids, Iowa. I studied five methods in use at that time. Only two systems were really usable, with the corneas remaining normal for seven days.

Another aspect I studied was sterilization of corneal tissue by a bolt of electricity delivered by a capacitron. This was a gigantic instrument, machine really, housed in a great big warehouse tower about twenty feet high and ten feet wide. It was the invention of two men whose names I cannot remember, associated with a university in New York. As I recall, I drove out from Iowa to Brooklyn where the capacitron was located. They had been using the capacitron, which delivered a bombardment of electrons for a fraction of a second, on foods and fresh tissues as a method of preservation. The target tissue was placed in the center of a shelf about three feet off the floor and the electron beam was focused down on it.

We enucleated the eyes of about eighteen rabbits after sacrificing them with air injections, removed the corneas immediately, and placed them in ampoules containing five different media. These ampoules were then treated by the capacitron with three different numbers of "pulses." Some of the ampoules were not treated but kept as controls. I returned to Iowa with the ampoules where with the help of Otis Lee, who was a skillful surgeon, I transplanted the treated corneas onto live rabbits' eyes at varying intervals of time. All of the treated corneas "took" but became opaque. We came to the conclusion that the electron bombardment had denatured the protein of the cornea as well as that of the bacteria. The untreated ones were not usable because of deterioration due to bacterial contamination. I had hoped that sterilization with the capacitron

would enable one to store corneas indefinitely, but it did not prove to be practical.

Hughes: *At the time, were they only using fresh corneas in transplants?*

Duane: Oh, yes. A lot of it had to do with solutions that they put the cornea in. They finally got around this problem and could store corneas very well.

Hughes: *When were they able to do it? Much after your work?*

Duane: No, it was worked out about the same time as I was studying the problem. My idea was just an experiment that didn't work. It was worth reporting though.*

Hughes: *Why did you initially become interested in corneal metabolism?*

Duane: Well, Robbie was interested in it and was working on it. I looked up several things and this didn't seem to be well known. I thought it would be a good place to start off. Other tissues in the eye seemed so delicate and special. I didn't know all there was to know about their anatomy. I wanted to make it easy on myself. The cornea is unique in that it is relatively large and doesn't have a lot of blood vessels to worry about.

Hughes: *The transplantations that you were doing were technically easy?*

Duane: Yes. Well, we did them on animals. The rabbit isn't very easy. The structure of its eye presents some problems.

Hughes: *You mean in terms of the cornea or in general?*

Duane: Sometimes in general. What I was concerned with was the cornea. I was picking animals that had the best corneas.

Hughes: *What do you mean by the best corneas?*

Duane: I wanted them to be clear, transparent, lustrous corneas. Cats' eyes are useful. Three of us who were working for an advanced degree would drive forty or fifty miles out from Iowa City and make a big circle around it, stopping at farms. Iowa is big farm country, you know. We'd say we were doing research on polio and needed cats. The usual reply was, "Help yourself to any you find out in the barnyard." These were invariably "wild" cats that lived by their wits and we'd be out all day long getting a few cats in a gunnysack. At the end of one such day, one guy caught two of them and came back to add them to the sack. I opened it but had a little trouble

* Duane TD, Lee OS. The preservation of rabbit cornea following exposure to the capacitron. Am J Ophthalmol 1949; 32:671-4.

getting them in, and two of them got away. I thought the guys would kill me! [laughter] So we had our problems.

One of the funniest cornea transplant stories I've heard was about a friend of mine who was head of ophthalmology at the University of Kansas. He decided he would transplant the corneas of two rapist-murderers who were being executed the same day. He lined up four recipients for the procedure. He found out at the last minute that the family of one of the criminals wouldn't give him permission to take the corneas but he did it anyhow. Next day after the surgery, someone remarked to one of the patients, "You are looking through a murderer's eyes." The remark got back to my friend who immediately went to the floor, took all the people involved, including families, into a room and said, "Now look, we've done a good thing medically and should be credited with being clever enough to take advantage of the situation. I don't want to hear anyone speculate about the murder circumstances. If you do, I'll just come down here and take the damn corneas out." [laughter] He got them to shut up.

Experimental Lenticular Opacities Produced by Microwave Irradiation, 1948

Hughes: *I'd like to discuss a paper of this period called, "Experimental lenticular opacities produced by microwave irradiations."* How did you get into that?*

Duane: Hines and his key research students–not faculty, but students–were consultants to Collin's Radio, a research company in Cedar Rapids about thirty miles from Iowa City, which has become well-known. It was run before the war by a guy in his shirt sleeves. It became one of the main developers of radar instruments and all that sort of thing.

One day they came to me and said they had exposed some animal eyes to microwaves. The animal had developed some lesions of the skin around the eye and they were wondering what had happened inside the eye. They wanted me to examine the eyes, which I did, and found cataracts had been produced. We thought it important enough to write a paper on it.

Hughes: *There is another author on the paper–A.W. Richardson.*

Duane: Yes, he was a researcher in the physiology department, and of course H. N. Hines was our chief.

Hughes: *How did you actually do the experiment?*

* Richardson AW, Duane TD, Hines HN. Arch Physiolog Med 1948; 29:765-9.

Duane: Cataract development had been known as a result of various forms of irradiation for several years. Microwave generators were being used medically as a thermogenic producer in certain areas of the body, such as muscles and vascular tissues. No one had examined the experimental animals for possible delayed effects about the eye of exposure to the microwaves, using the accepted dosage then in use clinically. We used albino rabbits and mongrel dogs as subjects, directing microwaves toward their optic nerves from a distance of one to five centimeters for a period of three minutes. You must realize the distance from the source of the microwaves was very short. We then measured the temperature induced within the eyes and afterward correlated the temperatures reached with opacity of the lens. Immediate opacities occurred in eyes reaching a certain temperature and in later studies when the time of exposure was increased. Delayed cataracts were found to occur more or less routinely when the time of exposure was as long as fifteen minutes or when there were repeated exposures of lesser magnitude. We concluded that care must be taken when using microwaves about the face and orbit.

Hughes: *Do you share the concern some people seem to have over the use of microwave ovens?*

Duane: No. There are safeguards with those ovens and fleeting exposure certainly isn't going to produce a cataract. There would have to be a critical exposure time and distance from the source to build up the heat that would damage the eye. There are certain occupations, such as blast furnace workers, who have a high incidence of cataracts. As with microwaves, it's the heat generated which does the damage. Radar employs microwaves and there have been reports of unusual exposure resulting in serious damage to the body in general, but I'm not aware of any cataract increase in people monitoring with radar.

II. OPHTHALMOLOGIST IN PRIVATE PRACTICE

Minot, North Dakota, February-August, 1949

[Interview 3: February 2, 1988]

Hughes: *Please tell me about Minot, North Dakota.*

Duane: Minot, North Dakota, had to be seen to be believed. My intentions were to set up practice in Seattle, Washington, after receiving my PhD in June, 1948 and after a brief consideration of a fellowship at Massachusetts Eye and Ear. Julia, pregnant for the third time and due in September, had taken our two children to Portland, Oregon, to spend the summer with my widowed sister, Valerie, while I went to Cambridge, Massachusetts, to start a fellowship and find housing for us all come fall.

We liked the Northwest, and when I decided that I really didn't want to do the fellowship after all, I joined my family in Portland. There seemed to be more of an opportunity for one to start a private practice in Seattle than Portland at the time, so we went so far as to look for housing there (with no luck) and I found out that to practice in the state of Washington I would have to take basic science exams in addition to having my national boards. The next exams were to be given in January, 1949, so we returned to Iowa City to await the birth of our third child, a second daughter, Rachel, at the end of September.

In October I went to the Academy meeting at the Palmer House in Chicago. There I met a general surgeon, Angus Cameron, who was looking for an ophthalmic surgeon to join his general clinic in Minot. He already had a medical ophthalmologist but was offering

$18,000 a year (it seemed like a lot of money in those days) just to do the eye surgery. Despite the fact that there was already a thriving eye, ear, and nose clinic in Minot, headed by a personal friend of my father, Archie McCannel (father of Malcolm McCannel who now is a well known ophthalmologist in Minneapolis-St. Paul), I figured it was halfway between Iowa City and Seattle, and if he would allow me to stay for just a year or so, I could comfortably move on to my intended goal, Seattle.

Well, after taking my basic science boards in Washington (successfully) and moving my family by train to Minot by the first of February, I discovered that the cost of living in Minot was about three times that in Iowa City. It would take a long time to accumulate any funds to move on. I also learned that $3,000 of the salary I thought I was getting would be in the form of a Christmas bonus and would depend on how well the clinic was doing overall. I also discovered that there was virtually no eye surgery coming to our clinic. I apparently was there as a tax write-off or something. I just sat around and read, told jokes, and began to climb the walls.

Hughes: *There was no opportunity for research, of course.*

Duane: Right. And Julia and the kids were finding it an unhappy place to be. The weather was steadily cold and windy, with the temperature constantly around zero and below. The ground was covered by frozen snow. The only place to walk was in the street and in deep frozen ruts. We didn't even know we had a sidewalk until late April. The children couldn't tolerate being outside for more than a few minutes because of the chill factor, despite being well bundled in snow suits, scarves, caps, boots, and mittens. They were literally housebound for weeks. There were no cultural opportunities, no place to "eat out" except for lunch at a tearoom on the balcony of a department store. It was an awful existence. There were some nice people associated with the clinic, but I can't remember socializing much.

We began studying the map of the U.S. for better places to live. When I was in Seattle in January taking the basic science exams, it was dreary, wet, and cold. I lost some of my enthusiasm for the place. Julia expressed the thought that in the Northwest we would be far away from family and friends. She had never been to the Southwest or the South and felt she would be more comfortable in the Midwest or East.

Spring came, the snow and ice melted, Julia went to Chicago and picked up our car which had been in storage there, and we had more mobility, but there was really nothing attractive to see as far as we were concerned. North Dakota has no real trees as we knew them in the Midwest, East, and Northwest. Wheat fields were to be seen for miles on end. And the wind never ceased blowing. It usually was not just a gentle breeze, either. Julia said it was all

she could do to get the laundry hung out, the wind was so strong. And then to top things off, there were the mosquitoes! Big as bees! Again, the kids suffered. If they played outside, they came in covered with mosquito bites like I've never seen before or since. I know there had to be people in that town who were well satisfied with their lot. In fact, I heard about one young girl who left to go to school or work in Wisconsin, couldn't bear the "closed-in" feeling the trees there gave her, and came back to her dear old Minot.

The Farm in Bedminster, Pennsylvania

Hughes: *So how did you finally break loose from Minot? Had you not signed a contract?*

Duane: No, it was a loose arrangement. I just told the head of the clinic that I wanted to leave the first of August. He tried to talk me into staying, but that place was just not for us.

We mapped out a trip covering the Midwest and Northeast, pinpointing places we thought we might want to live, and after taking the kids to stay with my mother-in-law in Iowa City, proceeded in early June to take a ten-day trip through Wisconsin, Michigan, Ohio, New York, and Pennsylvania in search of a place where we both might practice medicine. We had been looking at ads for homes, particularly in the East, in *The Saturday Review of Literature, The New Yorker* magazine, the *New York Times*, and such. We chanced upon an ad in the *Wall Street Journal*, placed there by Irving Leopold and his wife Eunice, which really brought us to Bucks County, Pennsylvania. I knew who he was, but of course he didn't know me. We answered the ad and said we would be in the territory in June and were interested in looking at their home for sale near Doylestown.

Among other places, we had looked at Ithaca in southwest New York, where Cornell University is located, as a possibility but were not drawn to it. A directory of ophthalmologists was giving us some information as to the need for such in particular areas as we traveled. We spent a night in Wilkes-Barre, Pennsylvania, which is in the northeastern part of the the state, with a fellow resident from Iowa and his wife, John and Dorothe Connole. They had long sung the praises of their native state, and it appealed to us more and more as we drove along.

When we arrived in Doylestown we learned that we were a day late for the Leopold property. However, we were so taken by the Pennsylvania countryside and the charm of Doylestown that we decided to consult a local realtor as long as we were there. We were "babes in the woods" for sure but lucked on to some first-class realtors (they happened to have been the Leopolds' realtors) who showed us several properties over a couple of days. Most of the

properties were in the country and we fell in love with one that was available about ten miles north of Doylestown, a fieldstone house which had been extensively remodeled in 1941, with a huge unpainted barn on sixty-seven acres, including a small orchard, open fields used by a neighboring dairy farmer, woods, and two streams. We were seventy miles from New York City and forty miles from center Philadelphia. We decided to buy it, with no doubts about being able to earn a living practicing ophthalmology in the area. We still live there, close to forty years later. Although there have been many changes in the surrounding community, particularly in the past ten years, we have never regretted our decision to put our roots down here.

There were many families, our age and older, with varying occupations, with whom we quickly and easily became friends. There was an active social life and in addition all the cultural advantages New York City and Philadelphia as well as New Hope, Pennsylvania, the artists' mecca, offered. For about the first twenty years we were more oriented toward New York City than Philadelphia, but in recent years we rarely consider going to New York.

northwest view of farmhouse

Private Practice in Bethlehem, Pennsylvania, 1949-1962

Hughes: *How did you go about setting up your private practice?*

Duane: Well, first I went around to generalists and internists in Doylestown to get their opinion on the opportunity for an ophthalmologist in Doylestown. They discouraged me; said there

were two or three good men coming up from Philadelphia part-time. Leopold was one of these. One internist said I'd starve trying to practice there. So, I got out the map and saw three fairly large towns more or less in a row about twenty miles north of our home. First I looked at Easton which is on the Delaware River just across from Phillipsburg, New Jersey, and on a main highway to New York City. One drawback right off was the fact that the main highway to Easton from our home was US 611, which was only two lanes wide and full of curves. It was a popular road and one could easily get stuck behind a big truck, making it impossible to make any time. Easton had very little office space available. What was available was subject to being taken over in the near future for a widening of the main highway to New York City, US 22.

So, I went west on US 22 about nine miles to Bethlehem, the middle of the three towns. Bethlehem was the home of Lehigh University but was essentially a steel manufacturing town and in 1949 was pretty unattractive. So I went right on another five miles to look at Allentown. It was the most progressive of the three but had several ophthalmologists in place and no office space available that appealed to me.

More or less in desperation, I went back to Bethlehem. There I wasted no time in calling on a guild optician by the name of William H. Price. He had a large shop on the main street which was busy as could be. Several men were in the back grinding out lenses. You don't see this much today. Mr. Price took me to lunch and told me all about Bethlehem. He said I'd be most welcome there. A Dr. de Schweinitz, a nephew of the famous George de Schweinitz, a professor of ophthalmology at Jefferson for a time in the late 1800s and then at the University of Pennsylvania until his retirement in 1924, was having to give up his practice because of illness. I would have to buy his records, which were useless as far as I was concerned, but it would mean a lot to his patients to know that I had them. There was another older eye doctor who was well liked and still practicing despite a diagnosis of cancer. A third younger man, a bachelor, wasn't interested in having a large practice, but he was considered to be competent. A fourth man, also youngish, had had a diagnosis of leukemia and so, being quite wealthy by inheritance, was more or less just dabbling in practice. I was really impressed by Mr. Price and decided to take his advice and set up practice in Bethlehem. They had quite a nice general hospital, St. Luke's, with a nursing school, and I was welcomed on the staff.

For an office, I had a suite of rooms on the second floor above a department store across the street from Mr. Price's shop. I shared the floor with a beauty parlor, the chief operator and owner of which had worked at "Charles of the Ritz" both in Paris and New York, so he said. His wife was an accountant who prepared our tax returns for several years. Because of the stairs and no elevator, many of my patients had difficulty getting up to my office. Also, one

of the first things I did was to order a slit lamp from Switzerland. When it was delivered to me, the driver just put it out on the curb, refusing to attempt delivery upstairs to my office. Fortunately, my friend Mr. Price had good men working in his shop who helped me uncrate it and take it upstairs in pieces where I miraculously put it together. I'm not much of a mechanic, you know. Mr. Price proved to be a loyal and generous friend throughout the years I was in Bethlehem. If a patient was dissatisfied with glasses he prepared from my prescription, he would take them back and keep working on them until the patient was satisfied. Occasionally, I would make a mistake and he would cover for me. He had a lot of sage advice about prescribing lenses and about life in general. He was a most remarkable individual, a self-made success in the optical business, who grew up in Brooklyn.

Hughes: *Dr. Duane, in trying to figure out where you were going to set up your private practice, were you also considering how far you would be from an academic position? Were you hoping to have a university affiliation?*

Duane: No. I had given that up.

Hughes: *Without any regrets?*

Duane: With a lot of regrets. If I had not had a family, I would probably have gone to Switzerland for six months, then Saudi Arabia, India, around the world, and by the time I had come back I probably would have gotten an academic job. The responsibilities of a family made a big difference in my life.

But getting back to my practice in Bethlehem: When I went over to the hospital the first time to do a cataract operation, they brought the patient into the operating room in a bed with two sandbags alongside his head. The usual operative procedure there was then to remove the cataract, put one suture in the wound, and keep the patient in bed for ten days, his head immobilized by sandbags while fibrous bridges formed across the wound edges.

Hughes: *Why only one stitch?*

Duane: I guess they figured that the stitches were foreign bodies and the cornea wouldn't heal as well if you put in stitches.

Hughes: *Were the sutures pretty coarse at that time?*

Duane: Yes, but they were getting finer. It wasn't too big of a problem. You can get them now so fine that they're useless; they are hard to maneuver and manipulate.

Well, I looked at this performance with the bed and sandbags and took the sandbags away. I said, "I want the next on a litter; I don't

want him on a bed. You can't be walking around a bed in the OR [operating room] to do eye surgery. The OR crew looked at me askance. Then I let the patient go home in four days. [laughs] The word got around fast. In about two weeks, I was booked several days ahead, and within a year, I was booked six months ahead. It wasn't that I was so good. I was just following my training, the national norm.

Hughes: *Did the other ophthalmologists resent you?*

Duane: I guess so, but I bent over backwards being pleasant. I was meticulous about my surgery.

Hughes: *Had you had any trouble arranging hospital privileges?*

Duane: To get into it?

Hughes: *Well, to get your patients admitted and to use the operating room.*

Duane: Yes, it was hard; it was crowded, although there were about 400 beds. One of the older doctors I mentioned, Kleinhaus, was chairman of the eye department and he could get beds when I couldn't, but I got enough.

Hughes: *So that really wasn't a problem?*

Duane: No. The hospital administrator liked me and the way I practiced. I got along fine. The head of the surgery department, Dr. William Estes, also liked me and even approached me to edit a "journal" to be put out by the staff of St. Luke's, but I didn't think it was a worthwhile project and declined. Estes was a competent surgeon who served as president of the American College of Surgeons, a distinguished honor.

Children

Hughes: *Please tell me about your children.*

Duane: Well, certainly they are not exactly children at this point in their lives, but I continue to think of them as such. Three were born in Iowa City about a year and a half apart, starting in 1945 with Alexa, named after my mother. Andrew was born in Doylestown, Pennsylvania in 1952, Joe and Rachel in between. All have been productive, contributing individuals. The closest lives four to five hours away. Joe lives in Singapore. All have married and provided us with seven grandchildren, two by adoption. In addition, Andy has a seven-year-old stepson. The older three were quite competitive but more or less followed in each other's footsteps in their formative years. They each went to boarding school four

years, college four years, and graduate school. Alexa got a Master's degree in social work and has done challenging and creative work in various endeavors in that field in the Boston area. Unhappily, she lost her husband to cancer in 1986, ten months after he was diagnosed. He was a tremendous individual, born and reared in Cork, Ireland. He had emigrated to this country after graduating from medical school in Cork, interned in Worcester, Massachusetts, had served two years with the U.S. Navy, completed both pediatric and neurology residencies, and was second in command in neurology at Boston Children's Hospital. Alexa is parenting their two girls, ages eighteen and twelve.

Joe majored in Asian studies at Harvard and got a Master's degree in it. Both the girls and he had studied Mandarin in boarding school, but only he continued with it over the years. He got a law degree from Boalt Hall at Berkeley and is now in charge of legal affairs for the Pacific-Asian division of Unisys. Unhappily, again, he and his wife have separated. They have three children, a boy, five, with his mother in Santa Fe; a girl, eight, and a boy, nine, lived with us for eight or nine months while their dad traveled extensively in the Far East until deciding to settle in Singapore. Despite how common split marriages are today, we can't quite get used to it and worry about the grandchildren.

Rachel graduated in medicine from Tufts, deciding relatively late in her college years at Radcliffe that she wanted to study medicine. She married a black, graduate of Harvard College and Harvard Medical School. They took internal medicine residencies at Strong Memorial Hospital in Rochester, New York, and passed their boards. Rachel decided the practice of internal medicine was too demanding of one's personal life so she took a dermatology residency at the University of Iowa while her husband took a fellowship in endocrinology at the Veterans Hospital in Iowa City, and now they have those boards. They live in northeast Pennsylvania near the New York border. He is with the Guthrie Clinic in Sayre, Pennsylvania, and she practices on her own three plus days a week in Elmira, New York. They have adopted two boys and have a custom-built passive solar house high on a hill overlooking the Susquehanna River. They have been very active in community affairs. Rachel is quite gifted artistically. She designs and sews articles, plays the piano very well, has composed a mass, does water colors, and various other things.

Andy, three and a half years younger than Rachel, has done things his own way. He didn't want to go to boarding school but did go to a private day school from seventh through tenth grade. He did erratic work there but obviously was bright. He transferred to our public high school in eleventh grade, then quit after about four months at sixteen. He had to have a job to stay out of school, but at seventeen signed up for four years with the marines. He had to have our permission to do so, which we were reluctant to give, but

he thrived on the discipline they offered. Coming home after a year on Okinawa and getting an honorable discharge from the marines, he was found to have a malignant melanoma of the upper anterior chest. This was diagnosed by my friend, Dr. Wallace Clark, in 1974. The lesion was widely excised, no nodes seemed to be involved, chemotherapy was administered by Julia and me for a year, during which time Andy worked full-time as a policeman for Doylestown Township. He had had repeated follow-ups, managed to graduate from a reputable college in Philadelphia while working full-time as a policeman, then quit to go to law school and got a law degree in two and a half years by going year round. He is now in the FBI fighting the drug war in Miami. Needless to say he is in tip-top shape. His wife is a special agent for the IRS in the tax evasion-fraud division. They seem ideally suited for each other.

It's interesting that although we attended high school graduations for the older three and Andy's graduation from "boot camp," we have never attended a college graduation.

l to r: Joseph, Alexa, Andrew, Rachel

III. MILITARY SERVICE

Korean War Volunteer Duty, 1951-1953

Hughes: *I understand you volunteered for service during the Korean War. How did that come about?*

Duane: Well, I had a nagging restlessness in private practice, especially when the Korean conflict arose. Julia's two brothers and both brothers-in-law had served many years out of the country during World War II, as well as several of my friends. I had a commission in the army but had been deferred from active duty for my residency. The war ceased, of course, in August '45 and I was given a chance to resign my commission, which I did as our first child had just been born and I wanted to finish my residency and work towards a PhD and eventually get into academic work.

In 1950 while playing tennis, I damaged a cartilage in my knee which resulted in surgery being performed on it at the University of Pennsylvania Hospital. I had been doing some volunteer work at Penn in the physiology department so chose to go there for treatment. I had a neighbor drive me down to the ER [emergency room], asked to see the resident in orthopedics (Dr. William Kraus now of Akron, Ohio), and asked him to recommend the best staff man to do the surgery. Surgery on knee cartilages in those days was something of an ordeal, but all went relatively well. I spent about six weeks on crutches, which was no fun.

On discharge from the hospital, I ran across an old friend from Northwestern, Dr. Gaylord Ojers, who had been working on a master's degree in pharmacology while getting his MD when I was doing the same in physiology. He had just finished a residency in ophthalmology at Penn under Dr. [Francis Heed] Adler, whom I

greatly admired, and was currently working in the offices of Drs. Adler and Scheie in center city Philadelphia. He was with Dr. Scheie at the time and introduced me to him.

Ojers and I started seeing one another socially and he said he intended to leave the office of Drs. Adler and [Harold G.] Scheie. He was interested in going into practice on his own or with someone about his age and experience. To make a long story short, I talked him into coming to my office and taking it over while I went in the navy. Gay had served in the army in World War II. I said, "When I come back we'll do it together." He was amenable to that. By that time, Dr. Kleinhaus had died and I moved over to his office, still near Mr. Price's shop but a much more suitable building. Gaylord was delighted to take over. He really enjoyed seeing patients; he didn't want to do research, didn't want to teach. I advised him to go down once a week to the eye clinic at the University of Pennsylvania where he had entree; he'd continue to learn ophthalmology. He did so.

School of Aviation Medicine, Pensacola, Florida, 1951

I went ahead with my plans for service in the navy and was commissioned in January '51. My first assignment was to be an ear, nose, and throat doctor somewhere in Indiana. This did not suit me at all. I wanted to go to Pensacola to the Navy Flight School so I went to Washington, D.C. and talked to the navy. They said, "Sure, we'll put you in flight school."

Hughes: Why did you want to be in flight school?

Duane: I had always loved airplanes. I had taken private flying lessons in Iowa City and passed the solo test. I didn't want to do eye work, much less ear and throat, in Indiana. I thought, "My God, that's worse than doing it in Bethlehem." I was lucky to talk them out of that.

Hughes: What did the studies consist of in flight school at Pensacola?

Duane: Well, you were taught how to fly, navy style, and how to handle emergencies. You drew duty about one day every third week. They'd bring in a sailor who had crashed his motorcycle and broken a leg. The corpsman would take care of him, set his leg, sew up lacerations, and so forth. Then he would come to me and say, "Sir, we have an enlisted man who fell off his motorcycle and he has a laceration eight inches long." I'd say, "I had better take a look at it." "Well, sir, we knew you were busy, so we closed it." I'd yell, "You S.O.B.! Let me look at him at least before your aggression takes over." We'd have an inspection in the lock-up. There would be young guys in there standing at attention as we made rounds. We had to ask them if they had hurt anything. Well, they had all kinds of imaginary injuries which we glossed over. I had to carry a "45"

while on duty. I was scared to death that it would go off automatically and blow my leg off. I hated it; I didn't need it either.

When I got my orders for flight school, I bought myself a small Ford from a friend and neighbor and drove down there to report for duty. I came up to the gate and I had a uniform on which I had purchased in Philadelphia. A marine saluted me. I saluted him. He wanted to see my orders. I didn't have a thing with me of that nature. He looked at me and said, "You can't go in there; you don't have any orders." "What do you mean I don't have any orders?" Well, I finally got in by calling the medical department, and a doctor on duty came to the gate and okayed me. We had been told that we must report to Pensacola on such and such a day or the war plans would collapse. We got down there and sat around for two weeks before anything was started. I had bachelor officer quarters which were terrific. I was down there having a regular vacation. The food was great and was served by prisoners of war.

Naval flight surgeon early fifties

Hughes: *It was a six-month course?*

Duane: I was there for more like eight months. Once they got started, they really put the heat on. They had a big syllabus and they wanted to get through it.

Hughes: *Who was doing the teaching?*

Duane: Oh, they had various navy doctors talk on centrifugation, physical examinations, refraction, and so on.

Hughes: *Were they pretty good?*

Duane: They were good; they were not outstanding.

Naval Air Development Center, Johnsville, Pennsylvania, 1951-1953.

Hughes: *Dr. Duane, tell me how you came to be at Johnsville doing work on the centrifuge.*

Duane: I wondered about circulation problems in the eye as I studied at Pensacola. I heard that they were setting up a human centrifuge at Johnsville. This was only twenty miles from our home, but I had not been aware of the station prior to my stint in Pensacola. The centrifuge had been ordered during World War II for gravity studies on aviators. It was just delivered in 1951. I requested assignment to Johnsville when I finished at Pensacola and had unbelievable luck in the granting of my request.

Hughes: *Had they been having trouble with blackout of pilots during the war?*

Duane: Oh, yes.

Hughes: *Was that the reason for ordering the centrifuge?*

Duane: Yes. The engineering problems in setting up the centrifuge were tricky. The fifty-foot arm of the centrifuge goes around in a circle, and contact must be made with stationary sources of electricity in order to take and record blood pressures, electroencephalograms, electroretinograms, and observation of the retina through the pupils. This was finally solved by using mercury as the contact medium. Various disciplines were involved and I worked with several interesting and stimulating men on the project. We enjoyed the challenge of the centrifuge.

Hughes: *Were there human centrifuges anywhere else in the country?*

Duane: Yes, there was one at the Mayo Clinic, one at Wrights Field in Ohio, and one in Pensacola. There were a couple more–one in California, I think–but ours was the biggest and best.

Hughes: *Were any of those other groups working on blackout?*

Duane: I'm pretty sure they all were.

Hughes: *Did the other groups have ophthalmologists?*

Duane: I don't think so.

Hughes: *So they didn't end up producing very much?*

Duane: Not in that field.

Hughes: *Was there much cooperation among the groups?*

Duane: Yes. We were in friendly competition, but we cooperated. We were far ahead of everybody, though. Our coup was hiring a medical artist by the name of Emil Bethke from Columbia University, where he was associated with the ophthalmology department. I was able to secure his services through two connections. One was Lee Allen, an ophthalmic artist at the University of Iowa and a protege of Bethke. Incidentally, Allen did much more than draw pictures of the fundus. He made beautiful artificial eyes and designed ophthalmic instruments. I consulted him and he suggested I call Bethke in New York. I also had a friend by the name of Dr. Ludwig von Sallmann who happened to be with the ophthalmology department at Columbia, one of the few full-time PhD investigators in ophthalmology in those days, who recommended him, too.

Bethke had a reputation for not drawing something he couldn't see. He was recognized as being one of the most skillful fundoscopists in the country. He was with us only about a week but during that time rode the centrifuge time and time and time again, which was an undertaking in itself, until he finally was able to see the changes going on in the subject's eyes about which we had told him. He produced some beautiful drawings illustrating what was going on in the development of blackout. We had them framed and just a couple of years ago sent them out to San Francisco to the Academy museum.

Hughes: *Why don't you tell me how you set up the experiments and what you were trying to prove?*

Duane: What we wanted to know was whether blackout was due to insufficient blood supply to the brain, mainly the occipital lobes, so it couldn't function. The question was whether it was the brain that was being deprived of blood or whether it was just the eyes. I, being an ophthalmologist, had a hunch that it was first a failure of the ocular circulation, but I needed to prove it.

Hughes: *Nobody had looked at the eye during blackout before?*

Duane: I don't think so. I could never find any citations in the literature or from people to whom I spoke. They would look at the eyes after a flight but the fundus would be back to normal by then. What we were trying to do was simulate a dive-bombing run in which the pilot first heads downward, levels off, and immediately noses up, experiencing a positive G force. We first tested rabbits and primates to ascertain whether there would be any damaging effect of such applied force. We learned from those studies that the safest positions for the subject and observer were a sitting position for the former and a horizontal one for the latter. We could tell the status of the general cerebral circulation by recording certain factors, but

changes in the fundus circulation could only be determined by observation with an oversized ophthalmoscope.

I was gratified to find that my hunch was correct. The arterioles of the fundus showed pulsations as the positive G force was applied, which diminished as the G increased to the point where the arterioles were emptied. There would be a brief period as vision was disappearing when the subject could subjectively note it and report before unconsciousness superceded, brought on by an inability of the heart to pump the blood up above a certain level, resulting in anoxia of the brain.

An interesting finding was that the veins remained full of blood. A few years ago Ed Jaeger and I went to a meeting on centrifuge experiments, and Sidney [D.] Leverett [Jr., PhD] showed a picture of a chap's fundus during blackout. His retina pictures showed the same thing as ours. When Leverett finished showing the slides, he said, "Any questions?" And I said, "Yes. The blood didn't leave the veins in your pictures; it only left the arteries. How do you account for that?" He said, "Well, I don't know, but Duane found the same thing." And I said, "Yes, I know. I'm Duane." It brought down the house!

Dr. Duane in the USAF SAM human centrifuge 1968.
Zeiss camera modified to photograph the fundus at high Gs.

It was difficult for Bethke to illustrate the pulsations which were so significant but his results were remarkably good. Later we were able to adapt a Zeiss camera to the centrifuge and coordinated views of the fundus changes as they progressed with signals from the human subjects. As a subject was losing vision, all the color of the fundus would leave. If he were conscious, that period was called "grayout"; if he continued on the centrifuge, loss of consciousness would ensue and that was called "blackout." Within

seconds to a minute or so after the centrifuge was stopped, the subject's vision was back and the fundus appeared normal. Subjects vary in the time it takes to go from "grayout" to "blackout."

I experienced blackout on a training project when I was at Pensacola. It scared the hell out of me. We had to go up with one of the navy fliers and do a dive and shoot at a target being dragged behind a second plane. We went down below the target plane and pulled up while I was to fix on the target through a viewer and shoot at it. Suddenly, I could not see the cross hairs. I blacked out. The pilot was disgusted but allowed as how he pulled up too fast for me.

Hughes: *Did you ever ride the centrifuge yourself?*

Duane: Each member of the team did. I was very reluctant to do so. I figured I was there as an investigator only, but after a time I decided it would help me understand the processes better if I rode the centrifuge. I always went home afterward feeling like I had been playing football all day.

Hughes: *When you started publishing papers on blackout, was there much reaction in ophthalmology?**

Duane: No, not particularly. I was given the Zentmayer Award for that work by the Ophthalmology Section of the Philadelphia College of Physicians. I used it as my thesis for admission to the AOS [American Ophthalmological Society], where it was accepted.

Hughes: *Did the military use any of the data in a practical sense?*

Duane: It certainly stimulated the need for better anti-G suit design and perhaps helped in designing aircraft to withstand higher and higher positive-G. NASA made use of the information and tilted the astronauts at thirty degrees for take-off to get transverse G, the least adverse force.

Hughes: *How did you get involved with NASA?*

Duane: I was in Washington one time and the NASA program had not been funded yet, but you could feel the excitement in the air, people thinking that we would be opening up a whole new world. I was excited, too. I thought the study of the universe and finding ways of living that are more peaceful than our own world would make for a better world. I wanted to be part of that organization, although I wasn't suited to be a full-time investigator in that field. I had no interest in sitting around Florida while they did oddball experiments.

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* Duane TD. Observations on the fundus oculi during blackout. Ophthalmol 1954; 51:343-55.

The fellow who was made acting head of NASA research, Dr. Sidney Leverett, PhD, who was a physiologist and chief of the biodynamics branch of the USAF [United States Air Force] School of Aerospace Medicine at Brooks Air Force Base, Texas, was a friend of mine. He would fly all over the country and tap the best biophysicists he could. He had me fly down to Houston to the space center, which was just a small building at that time. I talked to the astronauts on the physics of seeing and what we thought they would encounter when they got into space.

Leverett was scheduled to talk in Rochester [Minnesota] at the Mayo Clinic. Apparently, he only was told that he was to go to Rochester. He flew into Rochester, New York, arriving just in time to give his talk to nobody. He never did get to Mayo's and they were furious.

Hughes: *Was NASA interested in your blackout research?*

Duane: To some extent, but I was not closely involved with the ongoing program. Howard Hunter, a civilian engineer at Johnsville, a frequent subject on the centrifuge, a dedicated worker, and a very bright guy who helped to develop the ejection seat for pilots, went with NASA a couple of years later and probably continued our work.

Hughes: *Before we leave the blackout study, didn't you see a correlation between the visual field loss in glaucoma and the visual field loss in grayout?*

Duane: Yes. In grayout the vision goes before the brain shuts down because there is intraocular pressure pushing the blood out of the vessels, starting in the periphery. I was able to demonstrate that grayout proceeds with a defect in the visual field not unlike that of glaucoma, first in the nasal periphery then the temporal.

Hughes: *Dr. [Edward A.] Jaeger told me that you had a pet theory that carotid artery insufficiency could be determined using the plethysmographic goggles.**

Duane: Yes, with carotid insufficiency there is not the usual blood flow to the orbit. When the goggles are in place, they increase the pressure on the orbit, obstructing systolic inflow, and if a subject is on the centrifuge, he will experience blackout with much less G than he would with normal carotid blood flow. Each carotid can be tested separately. It reinforces the theory that circulation within the eye is a critical element in blackout, and that in turn reflects the pressure in the carotid artery. Of course, there are easier ways to determine carotid insufficiency today.

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* Interview with Dr. Jaeger, 1/29/88.

Hughes: *Where were you getting the money for the blackout research?*

Duane: From the NIH.

Hughes: *Did you have any trouble getting volunteers?*

Duane: No. There were a lot of navy enlisted men around. We didn't ask them to volunteer; we would assign them.

Hughes: *You were pretty sure there was no lasting damage done?*

Duane: Yes, we did it on ourselves first, à la Altman's *Who Goes First?** Incidentally, getting back to the grayout-glaucoma subject: We devised a system of doing visual fields which was taken up commercially and modified for an instrument which now does visual fields automatically. We probably should have been more aggressive and patented our method, but we were more interested in the information derived than the means of getting it.

Heterophoria in Pilots

[Interview 4: June 16, 1988]

Hughes: *Dr. Duane, I would like to discuss a paper on heterophoria which you published in 1953.*** *I have the idea that there was a debate at the time about whether significant heterophoria should disqualify potential aviators. Is that true?*

Duane: Yes, that was the situation. I thought it was important to find out whether it's a significant factor in aviation. If a pilot's coming into an airport or landing on a carrier, it would be much better if he had binocular vision as opposed to monocular vision, or worse, diplopia. Experienced pilots can fly without stereoscopic vision. They have subconsciously developed cues which enable them to do it. It didn't seem to make sense to take a young person with significant heterophoria or poor stereopsis into the service and teach him to fly. Candidates had all sorts of tricks for getting by most tests for binocular vision.

Hughes: *Tell me, please, the advantages of using both the Maddox rod test and the cover test. You said in that paper that the Maddox rod test wasn't sufficient in itself.*

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* Altman LK. Who Goes First? The Story of Self-Experimentation in Medicine. New York: Random House, 1987.

** Duane TD. A plea for the inclusion of the cover test for heterophoria in routine flight physical examination. J Aviation Med 1953; 24:425-8.

Duane: The Maddox rod test is a subjective test. You ask the patient to look at a single light source which is bent so that the left eye will see a dot and the right eye will see a vertical line. The examiner says, "Put the line over the dot." So the patient turns a screw which adjusts the lens over his eye and supposedly when he gets the line over the dot, he says, "There it is." The examiner can't really tell whether he's turned it properly or not, but if the screw has been turned beyond or under a certain range, the subject is disqualified. Pilots would learn where the line should be to be considered "normal" and adjust their answers accordingly.

The cover test is objective. The examiner covers one eye of the subject while having him or her look straight ahead, then switches the cover back and forth while he observes whether the covered eye has remained fixed in the straight-ahead position. This will pick up a tendency for the eyes to deviate in or out, giving less than optimal binocular vision. This tendency would be apt to occur when a pilot is fatigued. However, if the subject's eyes were otherwise okay, this tendency would not disqualify him.

Hughes: Did you personally have to disqualify quite a few people?

Duane: No, I thought the test was so poor, I wouldn't disqualify them on it.

Hughes: Did you use the cover test?

Duane: Yes, and I told the navy to use that test.

Hughes: Did you have any luck in convincing the navy to use the cover test?

Duane: No, but I kept using it. I've never been comfortable with phorias, squints, and so forth. Specialists in that subject have a language all their own. I always have my guard up when they are talking.

I had a funny experience with it back in 1947 after completing my residency and working in physiology. I heard about a course to be given on squint or crossed-eyes in Washington, D.C. and decided to take it. One of the speakers was Dr. Frank Adler and he was great. About the third day they were giving a special demonstration on a little kid. For kids they shine a very bright light on a gray wall in a streak. The examiner shines it horizontally or vertically and asks, "What do you see?" The kid did not reply so he was asked again. He was having trouble differentiating vertical and horizontal. One of the guys in the class said, "I can sympathize with the kid. I can't see anything either. I look at the target on the wall and all I can see is the babe I had out last night." A gal quick as a flash asked, "Vertical or horizontal?" We all roared!

Oak Ridge Institute of Nuclear Studies, 1953

Hughes: *Dr. Duane, in the spring of 1953 you took a course at Oak Ridge, Tennessee at the Institute of Nuclear Studies on the medical uses of artificial radioisotopes. What prompted you to take that course?*

Duane: The navy has a rule that you can't experiment using radioactive material if you haven't had some special instruction. I was given the chance to go and was amenable to the idea because I like nuclear physics, had read about Niels Bohr with great interest, and so forth. I wanted to learn more about it. It seemed like it was the coming thing.

Hughes: *You hadn't been using artificial radioisotopes?*

Duane: No, you have to take the course first. That's kind of an artificial stipulation, too.

Right off, on arrival down there, I had an interesting experience. I got in about nine o'clock at night and went to the designated hotel. The room was very plain, which was all right, and the bathroom was shared with the occupant of the next room. I made my ablutions and went to bed. The following morning, the bathroom door was locked, which I thought was a little strange. So I waited until I heard the occupant depart, then went in and shaved. At breakfast I learned that the other room was assigned to a girl from Egypt. She had a name that nobody knew whether it was male or female and the night clerk hadn't been clued in. The problem was soon rectified and I ended up sharing with a man who was a PhD at a drug company in the Midwest. He and I did some experiments together which we figured would take no time at all. We found ourselves still working on them at ten or eleven at night.

Hughes: *What sort of problems were assigned in the course?*

Duane: Oh, nuclear energy problems. Suppose you were going to make a radioactive baseball–how do you figure the radioactivity? What materials would you use? That type of thing.

Hughes: *So they were starting with the physics. They didn't leap in with medical applications?*

Duane: Oh, no.

Hughes: *Who was teaching?*

Duane: This was a consortium of schools, all of which had equal interest in it. I don't know how they set their standards. It was a first-class school.

Hughes: *What was the background of the people teaching the course?*

Duane: They were physicists and chemists who had been attached to the Manhattan Project for a long time.

Hughes: *Do you remember any names?*

Duane: No, I don't, but I did enjoy the level of talk there.

Hughes: *What sort of people were taking the course?*

Duane: PhDs, MDs, some older, some young. Today people say, "If you don't have a computer, you can't do modern work." In those days they thought that the bomb was just a side issue of the productive things they could do with radioactivity. I'm sure there were many who were there out of intellectual curiosity, like I was.

Hughes: *Did you do any laboratory studies while you were there?*

Duane: Yes, they gave us a laboratory problem every day. They were hard questions. Some of them took all day.

Hughes: *Were you taught safety precautions?*

Duane: Yes, mainly preventive measures.

Hughes: *What sort of things did they tell you?*

Duane: They told us not to hang around if an emergency should arise, that we should get out and let those trained for the problem handle it. There were rules to be followed when using radioactive materials.

Hughes: *Do you remember any talk about the biological effects of radiation?*

Duane: They gave us some examples of occupations. One of them was a factory where they made watches. The women were painting the dials with radium paint so that one could tell time in the dark. They would twist the fine brushes to a point with their tongues. Fifteen or so years later their hair and teeth were falling out, they had cancerous lesions eating away their faces–it was awful.

Hughes: *Was this to scare you into precautions?*

Duane: They had pictures of these people in a museum at Oak Ridge which made you respect the unknown and unseen potentials of radioactive materials a helluva lot more than lectures. I still see those faces.

When I was a medical student I went with a classmate friend, Harry Burnett, whose father was a radiologist, to a radiology meeting. Most of the old-timers participating in the meeting were

missing fingers from longtime use of radiation devices without using precautions. I've never forgotten that sight, either.

Hughes: *Were artificial radioisotopes used in ophthalmic research?*

Duane: Oh, sure. I didn't happen to use any on my own projects.

Associate, Department of Physiology, University of Pennsylvania, 1952-1954

Hughes: *In 1952 you became an associate in the department of physiology at the University of Pennsylvania. How did that appointment come about?*

Duane: The navy, to ensure that research was being conducted optimally at their various installations, wanted to tie up with the nearest academic physicians and scientists, and it seemed to them the place to go was the University of Pennsylvania. John Brobeck was professor and chairman of physiology in the undergraduate medical school. Julius Comroe was a professor of physiology who worked in the graduate school. They were both involved in the navy program.

Hughes: *What research were you doing while you were in the physiology department?*

Duane: We studied the effects of applied ocular pressure in positive acceleration on photic driving in man.

Hughes: *Whom do you mean by "we."*

Duane: Dr. David Lewis, a circulatory physiologist who also worked at Johnsville with me and who later emigrated to Sweden, and Dr. James Toole, a neurologist who later became a professor at Bowman Grey University, had joint appointments with me.

Hughes: *What were your findings? Did they have any practical application?*

Duane: We found that photic driving responses were inhibited by G forces. Changes in the EEG [electroencephalogram] were an index for titrating the stress the pilot was undergoing.

Associate, Department of Ophthalmology, Graduate School of Medicine, University of Pennsylvania, 1953-1954

Hughes: *In 1953 you became an associate in the department of ophthalmology at the Graduate School of Medicine at Penn. Were you teaching?*

Duane: Yes. A basic science course in ophthalmology, open to physicians who wanted to go into ophthalmology but had not yet had a residency appointment, was given at Graduate Hospital, located a mile or so from the University Hospitals of the University of Pennsylvania. It was soon after the war. There were not as many residencies as there are now. Candidates for them thought they would increase their chance for appointment if they took this basic science course.

Hughes: *Was it strictly basic science?*

Duane: No, basic science applied to clinical medicine.

Hughes: *Was there a set curriculum or could the students pick what they wanted?*

Duane: There was a set curriculum and they had to take the whole thing. The course was offered from September to December.

Hughes: *What did you teach?*

Duane: Dr. P. Robb McDonald was in charge of physiology and he leaned on me. I had to get up and off by six-thirty for my early morning lectures. I did it many times. I taught them physiology of corneal abrasions, fundus lesions–I went through the whole bit with them.

Hughes: *Who else was teaching there?*

Duane: Edmund Spaeth, Irving Leopold, Robb McDonald, and others of that caliber–smart, well-trained, good speakers. It wasn't as classy a program as it might have been. It was set up for an unanticipated need.

Hughes: *What was the relationship of the Graduate School of Medicine, specifically its department of ophthalmology, to the department of ophthalmology at Penn?*

Duane: Dr. Scheie was in charge of teaching ophthalmology to the medical students at the university. The men I just mentioned were teaching graduate doctors who wanted to go into ophthalmology. Graduate

Hospital is staffed by specialists from the University of Pennsylvania Medical School, assisted by residents and interns from the University Hospital.

Hughes: *Did the students get clinical experience, too?*

Duane: No, there were about fifty in a class. You can't provide refraction techniques, cataract removal experience, et cetera, to a group that size.

Hughes: *Was that all the training in ophthalmology these people had?*

Duane: Oh, no. They'd go through a residency. Some would have to wait longer than others before getting a residency and maybe would work in some other medical field while they waited for an appointment.

Hughes: *Did you have much contact with the rest of the faculty in the Graduate School?*

Duane: No. The rest of the faculty would come in, do their thing, and go back to their office. I did the same thing.

Hughes: *They were practicing ophthalmologists? They were teaching on the side?*

Duane: Yes.

Diplomate, American Board of Preventive Medicine, 1955

Hughes: *In 1955 you became a diplomate of the American Board of Preventive Medicine. Did that require an exam?*

Duane: It sure did. I was at the University of Pennsylvania, ostensibly a teacher. Having gone through the flight surgeons' course, followed by a few years doing experiments on aviation, I thought I was typical of what they were looking for when they formed an aviation board, a subboard of the preventive medicine board.

Hughes: *Why would aviation medicine be put under preventive medicine?*

Duane: They didn't have any other place to put it.

Hughes: *So there is really no relationship?*

Duane: Oh, there were airline rules and regulations but not much rationale. They announced that naval doctors could get in on a grandfather clause. When the smoke cleared away, only lieutenant

commanders or higher were automatically qualified. I had to pay one hundred bucks and go to Washington, D.C., for a three-day exam.

Hughes: *Was it tough?*

Duane: Well, I passed.

Hughes: *You had to have a written exam and then an oral exam?*

Duane: Yes.

Hughes: *You took it seriously?*

Duane: Heck, yes. I couldn't afford to slip through it like I did in the old days. I studied for it, and they asked questions on aviation medicine that were good.

Hughes: *Were any of your examiners well known?*

Duane: If they were, I didn't know them. I didn't identify with that board at all. I was silly to take the exams.

Hughes: *Please comment on the specialty of aviation medicine.*

Duane: Aviation medicine in my opinion is artificial. There isn't anything a flight surgeon can do that a generalist can't. But of course all medicine is becoming departmentalized these days.

IV. ACADEMIA

Research Associate, Department of Ophthalmology, University of Pennsylvania, 1960-1962

[Interview 5: June 17, 1988]

Hughes: *In 1960 you became a research associate in the department of ophthalmology at the University of Pennsylvania Medical School. What is the background to that appointment?*

Duane: I had been working in the department of physiology one day a week with Drs. Brobeck and Comroe. I enjoyed the work and associations but began to realize that it would be much more appropriate for me to be in the department of ophthalmology. That's where my training had been and where my interest lay. I went to see Dr. Adler. I long had great admiration and respect for him. He said I should definitely join the department of ophthalmology, come down Saturday mornings, do rounds, and all that sort of thing. So I did. He gave me an appointment in about 1955. I got to know Dr. Scheie quite well. He practiced great ophthalmology. He was a wonderful surgeon. He's the one who got me into Jefferson. When he took over the department from Dr. Adler he appointed me head of research. It was on a volunteer basis, no salary involved.

Hughes: *What sort of research were you doing?*

Duane: I worked on a problem that had to do with circulation of the aqueous. My memory of this is vague. I had moved on from the cornea. This was a natural extension of that work.

They had built a new building at Penn for general scientific research and the eye department was to move in there. It was a

beautiful building, the architect was famous and had won many awards, but it didn't lend itself to ophthalmology very well. The windows went from floor to ceiling. We needed some dark rooms for our work. I spent a lot of time fixing up a room where we could take pictures of animal fundi. Actually, we never did get going on anything during the time I was there.

Hughes: How much time did you spend there?

Duane: I spent most of the day, at least until four, on Saturdays.

Dr. Scheie was very interested in succeeding Dr. Adler as head of ophthalmology. For some reason he began calling me early in the evening several times a week. He'd talk about ophthalmology and people in the field.

Hughes: Was anyone else being considered for the job?

Duane: I don't really know. There was a committee but everything was kept confidential. Robb McDonald and Irv Leopold may have been.

Hughes: Did Adler have much say in his successor?

Duane: I don't know. I imagine he had some say. Dr. Scheie had been in private practice with Dr. Adler at his office in center city for several years. Adler had chosen him as his associate over McDonald and Leopold in the 1950s. The three had trained fairly close together under Adler.

I had an opportunity to discuss this with Dr. Adler once at the Harvard Club in New York City. He said it had been a difficult choice. He decided that Scheie had the most natural ability, he was very dexterous with his hands, he was courageous, and he was tough. He operated his own daughter who had squint. It took a lot of guts to operate one's own daughter. "Who could do it better?" he said. And it was true.

Hughes: Did you do any surgery during your appointment at Penn?

Duane: No. I didn't have a clinical appointment. I went to grand rounds and to clinical conferences.

Hughes: How were they run?

Duane: They were done in a dignified manner. They were worthwhile. Dr. Adler was a great diagnostician and he was always a gentleman, kind and considerate of the patient's feelings.

I had a patient when I was in Bethlehem who had a melanoma and I knew the eye should be removed. Since I was relatively young and new in town, I recommended that she go see Dr. Adler and be prepared to be admitted to the University Hospital for an

enucleation. Dr. Adler saw her, confirmed the diagnosis, and said, "Go back to Dr. Duane in Bethlehem and have him remove your eye. He is a better surgeon than I am." And I was! Dr. Adler was not a very good surgeon. Well, the lady came back to me for the removal of her eye and of course all went well. An enucleation is the simplest surgical procedure there is in ophthalmology. It's what we start the residents on. She sang my praises far and wide, thanks to Dr. Adler's thoughtfulness.

Hughes: *Please tell me about Dr. Robb McDonald.*

Duane: Robb McDonald was a quiet Scotsman who had a paucity of words but was a tremendous surgeon and teacher. I've saved a memo from him that is so typical. He had an article he sent to me. He put a note on it for me to read it. He wanted my opinion. If I thought it was worthwhile, I was to give him a call. If it wasn't, I was to throw it out. He was terse.

I used to kid him. He was an avid golfer and I played with him fairly often. Once we were both in a gully. McDonald got all set. He had his legs where he wanted them and practiced swinging. Just as he was starting his backswing, I yelled at him, "It's not your turn." Oh, he got mad at me, put the stick down. "Don't talk to a guy when he's in the middle of his swing." I said, "Hell, you're always talking about fair play, and you're swinging out of turn. I thought you'd be ashamed if you got up on that green and the other guy didn't." He said no more.

I thought he was a great doctor. He had excellent judgment. He had an ego, but he wasn't always trying to be the world's authority. He helped a lot of others up the academic ladder.

Hughes: *Did he have any particular interest within ophthalmology?*

Duane: Yes, he was a retinal man. He started retinal surgery and retinal services at Wills. Those guys were organized under a European club called the Gonin Club. It was a very prestigious group. He was also an excellent cataract surgeon. I chose him to do my mother-in-law's eye.

Hughes: *What about Leopold?*

Duane: Irving Leopold is extremely bright and a scholar. He is probably the best speaker I know. He's really smooth. He never uses notes no matter how long the talk. His presentations are always well organized, to the point, and understandable. He seems to have a great deal of energy. He was criticized for backing out on a couple of commitments at the eleventh hour, but he probably had his reasons. He is very well liked and highly thought of in general. He was the first ophthalmologist-in-chief at Wills and upgraded that place during his tenure. His forté has been pharmacology and he

found his niche with the Allergan Pharmaceutical Company, of which he is a vice-president.

Chairman, Department of Ophthalmology, Jefferson Medical College, 1962-1981

Hughes: *Tell me about your appointment to Jefferson Medical College as professor and head of the department of ophthalmology.*

Duane: One day, out of the blue, my secretary told me a Dr. Sodeman was on the phone and wished to speak with me. It so happened that I had had time on my hands while in Pensacola and had read an excellent text entitled, *Pathologic Physiology: Mechanisms of Disease* by William Sodeman–had read it cover to cover. So I asked him when I picked up the phone if he was calling from Missouri, because I thought the author Sodeman was from there. He said he was calling from Philadelphia where he was dean of Jefferson Medical College. I asked, "Are you the one that wrote the book?" Well, I said the right thing. He thought an ophthalmologist who knew his book was a kingpin for sure.

He said that they had an eye department at Jefferson that was in terrible shape and they didn't know how to fix it. There wasn't a good spirit among the faculty, the physical plant was abysmal, everything was wrong. The head of the trustees, the president of the college, and he had gone to talk with Dr. Scheie about it. They needed his advice and Scheie was delighted to give it to them. They said, "Who is the right person to get to build up our department?" Scheie said, "There is a young guy working in our department. He's had good training. He is wasting his time in private practice in Bethlehem." So then the dean called me and I went down to look things over. I wasn't all that familiar with Philadelphia. I just vaguely knew where Jefferson was located. The dean said, "Now, don't go up and look at the clinic or you're likely not to take the job. It's terrible!" It was. He was not kidding. You'd think it was a veterinary office at the turn of the century.

Hughes: *Antiquated, you mean?*

Duane: Antiquated. It was unbelievable, laughable. They had an elderly man there supposedly screening patients. He took about six buses to get to work. He was hard of hearing. He used shoe polish on his hair. What a character! He would say to a new patient, "Now read this. Read. Goddamn it, read!" Lighting in the room was so inadequate the patient probably couldn't even see the chart. The waiting room had regular wooden pews for patients to sit in. There was only one slit lamp and it was a big production to get to use it. All the equipment was just junk. But I took the job.

I got along well with the dean and 'most everyone. They said they would get me money to fix it up. President John F. Kennedy came in about that time and he was setting up a program similar to what Roosevelt had during the Depression–corps of technicians and laborers who worked on all sorts of fix-up projects under government subsidies. Academic institutions were eligible if they had need. All you had to do was to contact them. I had heard about this, put together a proposal, and we were granted funds and workers to renovate our clinic and to expand it.

Hughes: How much money was it?

Duane: Oh, I don't know–about a hundred thousand maybe.

Hughes: If you had not been given that, would the college have provided funds?

Duane: I don't know. They've always been stingy about giving out money. I was in a peculiar position. I had not grown up in Philadelphia ophthalmology. I didn't even know the way to the hospital the first time I went there. I was naive about academic medicine. But I made it clear to Sodeman that I would want to have a say in policy making around the school. I wasn't just going to be a slave. So he put me on the curriculum committee. That committee was, I think, the most important internal force Jefferson had.

Ophthalmology was assigned only two beds in a surgical ward. On top of that, this was the area used for surgical patients with infected wounds. I went to the president, William Bodine, threatening to resign unless ophthalmology was given a ward of its own. He got me the space. Bit by bit we brought the department into good shape. We replaced incompetent ancillary staff, such as nurses and secretaries and that character who was "screening" patients.

Hughes: What about the faculty? Did you make any changes?

Duane: Well, yes. When I got the job, someone wrote a memorandum to the faculty introducing the new head of ophthalmology. Nobody knew me, and I didn't know any of these ophthalmologists. So I called a meeting of my faculty and told them that I could see problems with seeing patients, in teaching, and with research. I said we had a small department, but if we did things right, we could hold our own with the best places in the country.

A group of men–I guess there were about six–were from Wills. They came over to Jefferson and rather high-handedly ran this show. They showed little concern for the patients or the residents, just took advantage of the clinical material that was there. They announced that since their man, Charlie Steinmetz, had not been

made head of the department, they were going back to Wills, and they did.

We had large medical student classes, over two hundred a year, and they had to be taught enough basic ophthalmology to be safe doctors. We had a total of six residents, two each year, who were there for training in medical and surgical ophthalmology. So it was a real challenge.

Hughes: *Why had you been chosen when your ties to the academic world were not very strong? How did they know that you could raise money and reorganize the department?*

Duane: They didn't know that. They just took a chance on me.

Hughes: *Why do you think they took that chance?*

Duane: I guess because they thought of the candidates they'd seen, I had the greatest potential. There are no guidelines. And, of course, they had had advice from Scheie. He and the president of Jeff were good friends socially.

Hughes: *What did you do when the men deserted you for Wills?*

Duane: I made do with a few Jefferson graduates, Joe Waldman, Michael Naidoff, Bill Hunt, and Sidney Radbill, excellent practicing ophthalmologists, who had open minds and were willing to give me a chance. They were typical, loyal Jeffersonians and great to work with. I interviewed each of them informally and asked what were the good things and bad things about the department, how they thought the service should be run. They had been without a chairman for about a year. I seemed to spark an interest in them from the start. They were very cooperative and helpful to me. I arranged faculty appointments for them. I had them work with the residents in the clinic.

I did all the surgery with the residents for a while. I lectured to both the medical students and the residents. I used anecdotes from my practice in Bethlehem to illustrate points and capture their interest. I met with the residents every morning at eight. I would assign them about twenty pages of a good ophthalmology text, Adler's or Newell's, to study each night and we'd discuss it. From their participation in that, I got to know them, to understand their potential.

Hughes: *Did you enjoy doing surgery?*

Duane: No.

Hughes: *Why not?*

Duane: Well, I think it is an exercise in dexterity. I used to have pretty good dexterity. When I was in private practice, I was always worried about the outcome of my surgery, unnecessarily, but to the extent that it interfered with any enjoyment the average surgeon has from his work.

I discovered I had Parkinson's disease while doing surgery. I noticed the knife shaking under the microscope while making an incision in the cornea. I didn't say anything to the resident and he didn't see it, I guess. A couple of days later it happened again.

Hughes: Just every once in a while?

Duane: Well, no, all the time I was operating a tremor was there. So I got worried. I sought out my friend, Norm Schatz, in neurology. He took me by the arm–he's a little guy, wonderful guy–and he walked me over to my secretary. He said, "Give me a sample of Dr. Duane's writing ten years ago." Ten years ago I wrote, say, eight words to a line. Now I had about twenty words, real small. He looked at me a few seconds, then said, "You have Parkinson's disease."

Hughes: Had you suspected that?

Duane: No, I wasn't sure what Parkinson's was.

Hughes: When were you diagnosed as having Parkinson's disease?

Duane: Well, don't hold me to it, but I think it was around 1978. It came on very slowly. I had a tremor and noticed I didn't have the strength I usually had.

Hughes: What happened to the surgery?

Duane: I had to give it up. I wouldn't operate anybody's eye with a tremor.

Hughes: Did you give it up quickly after the diagnosis?

Duane: Yes, right away.

Hughes: Well, let's go back to your early days at Jefferson. What other changes did you make as chairman of the department of ophthalmology?

Duane: I got some full-time help. I put all the volunteer doctors to work at specific tasks and let them know that their efforts were appreciated.

Hughes: What sort of tasks did you assign them?

Duane: Oh, the use of the slit lamp, the gonioscope, how to do fields, and the like. There was a volunteer to oversee the residents during

clinic hours. They weren't without supervision. We had conferences late in the afternoon a couple of times a week in which the volunteers discussed cases which had been seen in the clinic that were of particular interest.

Key Faculty Members

Hughes: *How did Dr. [William C.] Frayer happen to come to work with you?*

Duane: Not too long after I had taken the job at Jefferson, I was approached to do the survey for Research to Prevent Blindness, which would be a full-time job in itself and require my being away a great deal of the time for at least a year and maybe longer. I realized I would need some capable person, preferably in the academic field, who could hold the fort for me. Bill Frayer had all the specs. He was a good friend of my former partner, Gaylord Ojers; he had trained at Penn, was working in the office of Drs. Adler and Scheie, and teaching at the University of Pennsylvania. He was an excellent surgeon and had special training in pathology. He was soft spoken, level headed, academically inclined, and liked by everyone.

So I went to Scheie and asked him if there was any possibility that Bill Frayer could join me at Jefferson. Bill was agreeable to the idea, Scheie gave it his blessing, and Bill joined me in June, 1962, about four months after I took over at Jefferson. He was an ideal choice, and I was really fortunate to get him. He stayed with us for ten years and returned to the University of Pennsylvania to be part of the Scheie [Eye] Institute. Jefferson at the time was in serious negotiations for a merger with Wills. Bill was not interested in becoming involved with that. He did an awful lot for Jefferson the years he was there.

Hughes: *What changes did you make in teaching the medical students and residents?*

Duane: We set up a protocol for the complete examination of an eye patient, which I don't think they had had before. It can be a time-consuming procedure at first, but with practice one can go through it very rapidly and be assured that something obscure but significant is not missed. An experienced ophthalmologist can of course skip over some routines a lot of the time, but the best of them will sometimes get caught by the omission of part of the general examination. We stressed taking the time to do things thoroughly. We stressed honesty: If not really sure about something, one should not try to bluff it. We stressed ethics, using the Golden Rule, and so forth. I put the surgical schedule into proper perspective. I allowed the senior residents to do operations when they had demonstrated that they were safe surgeons. As a rule, there were always two MDs involved.

Hughes: *What had been the practice before?*

Duane: It was haphazard. If you worked up a case, you'd do the surgery even if you were a first-year resident. It just wasn't right. I worked out systems for night and weekend coverage. One of the residents was moonlighting in the winter for an attending who spent several months in the warmer climes. He said to me, "I'm a doctor. He is perfectly willing to have me do it. He trusts me." My reply was, "I don't care if he trusts you or not. It is not safe for you to be doing that. You are not to do it anymore." He got mad. Everybody got mad at me when I passed such rules, but you've got to have it organized and let people know where they stand. I think that's an ubiquitous requirement for anything.

Hughes: *Was there a basic science component of the residency programs?*

Duane: No. We touched on signs of infection and basic science application but never went into it in depth. There just didn't seem to be time for it. The residents were busy cranking out cases and learning while doing it, often with help from the older residents.

Hughes: *Dr. Duane, would you say something about your style of administration when you were chairman of the department at Jefferson?*

Duane: That's a hard question. I don't know whether style comes from positive thinking or whether it's just some subconscious reaction that you have to all situations. Life is a series of decisions, what you're going to do in this environment or that environment and how you modify it as you go along. You can advocate almost anything. You shouldn't be too rigid; you should be pliable and cooperative and swing with the punches. You aim to have your institution come out in the best possible light. When others get crazy, you must take a stand and fight them. So I can't say that my administration takes any particular approach. I haven't made any effort to learn how to be an administrator. I think the business of being tough and throwing your weight around is nonproductive.

Hughes: *Do you like administration?*

Duane: Yes, I like it all right. It's frustrating sometimes. You have to give and take and put up with a lot of headaches. I try to be consistent. That's important. You tell a person one thing on Monday and another thing on Tuesday, he won't trust you.

Hughes: *In general, were you on good relations with the faculty?*

Duane: Yes, I think so. I had occasional clashes with a few, but nothing serious.

Hughes: *Had research been done in the department of ophthalmology at Jefferson before you came?*

Duane: No, there was no lab.

Hughes: *What did you do about that?*

Duane: I didn't have the time to do research myself for some time, but then a chap by the name of Thomas Behrendt came through one day from Brazil. He was a big guy–about six feet four–and spoke with a German accent. He wanted a job doing basic clinical research. His father was an ophthalmologist who had fled Germany and gone to Brazil in the late thirties with the advent of Hitler. Tom went to medical school in Brazil and then learned ophthalmology from his father. He has a brilliant inquiring mind and has always been interested in photography, lasers, electronics, computers, and so forth. I took him on and we did some experiments together. He worked on photic driving in twins with me.* He tended to think and talk in scientific terms which weren't all that clear to me and I didn't feel all that comfortable with conclusions he drew from our work. He also worked on the plethysmographic goggle project. He is still with the department but has been incapacitated in the past year with myasthenia gravis. He did a lot of work with diabetic retinopathy. He was very popular as a teacher of the medical students.

Hughes: *Were there others of note in the Jefferson group?*

Duane: Yes. Edward Jaeger was a first-year resident when I began at Jefferson. He was a quiet, steady, tireless worker–outstanding. We asked him to stay on and give us a hand when he finished. He was an officer in the navy reserves and spent much weekend time at the Willow Grove Naval Air Station north of Philadelphia. He worked on the plethysmographic goggles with us. He has a private practice in Media, outside Philadelphia, with another Jefferson trainee, Peter Polena, who went through the program a few years later. Peter, too, has been part of our staff since he finished his residency.

Ed has been in charge of the teaching of the medical students at Jefferson. I chose Ed to be associate editor with me of the loose-leaf texts *Clinical Ophthalmology*** and *Biomedical Foundations of Ophthalmology.**** In addition to all his other commitments, he has done a Herculean job on that project for the past several years, for which I'll be forever grateful.

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* See the discussion on twins below.

** Hagerstown, MD: Harper and Row, 1976.

*** Hagerstown, MD: Harper and Row, 1982.

Another jewel of our many-faceted faculty came in the person of Vitaliano Bernardino, Jr., better know as "Jun," who was born and educated in the Philippines, and then came to the States for a fellowship in retina/vitreous at Mass Eye and Ear for two years. Following that he returned home to do private practice, saying that Boston was too cold for his blood. About that time Bill Frayer had made known his intentions to go back to Scheie. I called my old friend, Dave Cogan, then at Mass Eye and Ear, and asked if he knew of anyone who was an eye pathologist who might be interested in joining us at Jefferson. "If you can get him to come, there is a man who would be great in filling that spot," he said. "The only drawback is that he has gone back to practice in the Philippines." I took his name and sent off a letter to him, more or less offering him a place in our department sight unseen on Dave Cogan's recommendation.

To my surprise and everlasting delight he came to see us and I liked him the minute I laid eyes on him. He agreed to come work with us. He had studied pathology for a year in the Philippines and had pursued his interest in it while being around Cogan. He was another unusually bright individual with many outside interests. He is a truly gifted musician who composes music and plays classic to jazz on the piano by ear and by reading music. He has a tremendous collection of recordings in all media and always has the latest equipment available to reproduce them. He is also a foreign car buff and seems to regularly keep no less than a dozen cars in running order at his home. His enthusiasm there is shared by his four boys, all but one of driving age. His wife, Nanette, is boarded in dermatology and dermato-pathology. They share an office in lower Bucks County. Jun prefers to have her handle the financial cares of running an office. He grows increasingly disgusted with the "business" crunch of being a physician today, but with three boys in college–one is in law school, and the youngest in private school, to say nothing of the upkeep of all those cars–he can hardly quit.

The Residents

Hughes: *What did you have in the way of conferences and grand rounds when you were at Jefferson?*

Duane: As I mentioned, I met with the residents, eventually just the new ones, at eight every morning. We covered a standard textbook and I explained the nuances of it. I found it a very profitable time. The staff used to kid me about it. They called it "Sesame Street" or "play school." But the residents liked it. They found they learned a lot. Later on when they'd come back, they would mention some sign or such they had come across, recalling how they had learned about it.

I've mentioned the late afternoon sessions twice a week, but our biggest session of all was Tuesday morning. A staff member would talk on a subject he had researched and then there would be a general give and take by the rest of the group. It was always well attended and generally stimulating. John McGavic, who has a special interest in pathology, came in from the suburb of Rosemont where he practiced and contributed a lot.

Hughes: Did you have rounds as well?

Duane: No, because the patients were too spread out through the hospital. It wasn't practical.

Hughes: What did you look for in selecting a resident?

Duane: The criteria we used?

Hughes: Yes.

Duane: First of all, I wanted to know if he was honest.

Hughes: How did you determine that?

Duane: Well, we'd ask him, "Have you ever been in trouble?" We'd go back and ask him questions that he had answered earlier and see if he gave the same answer. It was a hard thing to assess.

Hughes: Were you usually right?

Duane: Maybe a third of the time. We would also want to know if he were industrious, if he were bright, if he had a decent approach to life. It's pretty difficult to determine in one interview these points, but you just can't take a guy on written recommendations. You invariably get some feedback when you are face to face with an applicant.

I remember one resident we accepted that we had to toss out midway through his residency. He very frequently came in late for the eight A.M. session and was obviously fatigued. We discovered he was moonlighting in an emergency room in some hospital. We put at end to that. Then one night the supervising nurse heard a baby crying up on the ward where there were only adult patients. She discovered this resident examining a patient scheduled for surgery the next morning, holding his baby, crying over his shoulder! His wife couldn't get a babysitter so she just left it with the daddy while she went somewhere that evening.

The final blow came in a call from the pathologist of a first-rate hospital where our residents would be called to enucleate the eyes of a deceased for the cornea or general study purposes. The man was more than furious, saying the resident on call at Jeff had been

out and taken off the eyelids as well as the globes! We simply had to give up on him. It seemed a terrible waste. The chap had completed college and medical school and had a wife and at least one child to support. He really shouldn't be practicing medicine at all. I can't remember what became of him.

However, we've had some super residents, too. Very, very few have turned out poorly. The majority have been a credit to us. Most applicants have many interests outside of medicine.

Hughes: *What sort of relationship did you try to establish with your residents?*

Duane: You can't be too palsy with them. You should keep your dignity but be friendly and fair, not dogmatic. My door was always open to them. When they came into my office and closed the door behind them, I knew something unusual was up. As chief, I couldn't help but be involved in their personal affairs sometimes.

teaching residents at Jefferson Medical College, early seventies
[photo by Peter A. Kind, III]

Chairman, Curriculum Committee

Hughes: *Please tell me about your involvement with the curriculum committee. Whose idea was it to revise the curriculum?*

Duane: It was Sodeman's idea and he appointed me to the committee. I was made chairman.

Revision of the curriculum goes on in medical schools all the time. I should say that periodical revision is the norm. There was some delay in acting on the project with the death of the president of the board of trustees and the appointment of Peter Herbert, head of pathology, as his replacement. Dean Sodeman chose to depart at this time to another field of medicine, and he was replaced by Will Kellow, who had been dean at Hahnemann Medical School. Kellow

had gone to Hahnemann from the University of Illinois. He brought with him to Philadelphia, first to Hahnemann then on to Jefferson, a physician by the name of Joseph Gonnella. As assistant dean, Joe had had a fellowship in pedagogy at the University of Illinois. This, as I understand it, is a study of the learning process and how to facilitate learning. It was a natural for him to act as an advisor to the members of the committee. So we began to work on the curriculum, and it was really hard work.

Hughes: *How many were on the committee?*

Duane: About eighteen, I would say.

Hughes: *Was there a representative from every department?*

Duane: No, and for a reason. We were to be concerned with the overall educational problems.

Hughes: *Who had chosen the committee members?*

Duane: The dean appointed them.

Hughes: *What was wrong with the old curriculum?*

Duane: It seemed that the time a student would spend in a particular department was predicated on how many years the head of the department had been with the school; how much "clout" he had. It was not on a logical basis. Some of the heads were not good teachers but would demand a lot of time for their subject anyway. We had round table meetings and a couple of retreats away from the college. It took about three years to complete the project. We had some knock-down, drag-out fights. I had a lot of trouble with the head of medicine, Bob Wise, although he was a good friend of mine. Despite being obviously wrong (in my opinion) he'd stick to his guns. I also had a lot of trouble with Russ Schadler, head of bacteriology. He was ready to kill me.

Hughes: *What was the issue?*

Duane: Medical students have so much to learn today–much, much more than when I went to medical school. These men were having the students go to the laboratory and do experiments that had little bearing on general clinical medicine. There just isn't the time today to be esoteric in medical school, as I see it. There will be those who prefer the laboratory to clinical medicine. That's fine. They are the ones who will carry on the basic research, either by changing gears while in medical school or in postgraduate work.

Hughes: *So you were taking away teaching time from their subject?*

Duane: Yes, or we would place their subject in the sophomore year or junior year when they'd been doing it in the first year. Some on the committee were making decisions on an emotional basis, while the rest of us were doing it on a factual basis.

Finally, when we thought we had a decent curriculum worked out, we held a meeting to present it to the faculty. All the troublemakers were sitting there with their guns loaded. We started out giving our philosophy. A member of the pharmacology department would interrupt from his seat in the audience and criticize a statement. "What's your evidence for that?" I was saying it would nice to have a rounded clinician supervise the teaching early in medical school to be sure the information could be applied to treating patients. There would be no sense in learning it if that were not the goal. He stood up again and said, "Well, if you're so interested and you know so much about what's clinical and what's not, why don't you repeat four years of medical school, check them, and give them the relevant stuff?"

I looked at him and asked the dean for permission to turn off the recording of this session. He said, "Go ahead." I said, "You remind me of a fellow that was a psychiatrist and just starting his practice. He hadn't any patients. Suddenly, the door of the reception room opened and in walked a burly fellow with a top hat and a big black cape. He said he wanted to see the doctor. The secretary called the doctor on the interphone and he said to have him come in. The patient entered the room, threw off his cape onto the couch and sat down, still with the top hat on his head. Then he took that off, too, and flung it aside. There was a parrot sitting on his head. The psychiatrist had never seen anything like that before, but nonchalantly asked, 'What can I do for you?' The parrot said, 'Get this fellow off my ass!'" I said that's the way I felt about the pharmacologist. There was some laughter. The curriculum was accepted.

Hughes: Tell me what the new curriculum consisted of.

Duane: It consisted of planned-time allotments for concepts. If one wanted to teach about the esophagus, he wouldn't be allowed to spend three weeks on it. Students were to be taught that they had to be responsible. If they were assigned to a ward or clinic, they were expected to be there every day, doing whatever was lined up for them. We devised a course around the economics of medicine, teaching the students the cost of medications, hospitalization, tests, and so forth, in response to a request from them for such information. There's no one way to plan a curriculum. We had deficiencies but every curriculum does. There are a lot of ways to learn things, but there has to be some organization, some logical sequence, or it's chaos. Lives can be lost by poor teaching.

Hughes: *So you were adding whole new subjects as well as changing the timing?*

Duane: Yes. For instance, orthopedics has always been very strong at Jefferson. But the average medical student doesn't need a helluva lot of knowledge about orthopedics. If that is his special interest, he can take a residency in it. You can't practice orthopedics from what you are taught in medical school. Well, orthopedics was so powerful and had so many staff members that they had a disproportionate amount of time in the old curriculum, and we took it away from them. They weren't happy about it, but finally, I think, saw it from our point of view.

Hughes: *Did the time spent on ophthalmology in the curriculum change?*

Duane: Yes, we took it out of the curriculum completely. We made it an elective.

Hughes: *That must have impressed people.*

Duane: I didn't do it to impress them.

Hughes: *Why did you do it?*

Duane: Because I thought that medical students didn't need a lot of ophthalmology. We have over twenty divisions in ophthalmology. It would be ridiculous to go into any depth with a medical student. There just isn't the time.

Hughes: *If they haven't been exposed in medical school, how do you expect to attract them to ophthalmology?*

Duane: We couldn't, but we think the specialty stands on its own here.

Hughes: *What happened to the opposition after the curriculum was passed?*

Duane: It never gets completely settled. Somebody comes in and complains about the whole situation when he only knows a part of it. That's inevitable.

Hughes: *My notes say that the first year of the new curriculum was 1972.*

Duane: I can't remember.

Hughes: *Were other medical schools making similar changes in their curricula at the same time?*

Duane: Oh, yes. It's a national pastime.

Hughes: *Were the changes similar to those that you were making?*

Duane: Some were; we borrowed from other places.

Hughes: Did the committee look at the curricula of different medical schools?

Duane: Joe Gonnella was the source of most of our ideas, though he would deny it. He is very modest. I was the one to put it into operation.

Hughes: How did you get people to come around to your viewpoint?

Duane: A little of everything. Some people I took to meals, talked with them about the spirit of the project, what they could do to help us. Others I just fought with and stood my ground. There were unpleasant phone calls, but I wouldn't give in on something I believed in.

President of the Staff, Jefferson Medical College Hospital, 1970-1973

Hughes: You were president of the hospital staff. What can you tell me about that.

Duane: I chaired the monthly staff meetings and was privy to the problems perennially present with a teaching hospital. There is often conflict between the academic staff and the "working-man" volunteer staff. Jefferson had its share of such. Frank Sweeney was medical director and I think he suggested me for the job. We were good friends and I used to kid with him a lot. I was relatively new to Jefferson. I shied away from the politics of the place. Frank was an alumnus of Jefferson and had been on the staff of the medical department for many years, so he was well immersed in the political scene there.

Hughes: You were elected, were you not, to be president?

Duane: Yes, I think by the executive faculty.

Hughes: What's the definition of executive faculty?

Duane: Chairmen of the departments.

Hughes: Were there any particular issues that stood out during your tenure?

Duane: No.

Hughes: Were you the first ophthalmologist to be elected?

Duane: I'm pretty sure I was. The ophthalmologists who preceded me were not too popular with the general staff, not that I was any great hero.

Hughes: *There are several interesting objects in the Academy's museum which belonged to Dr. George de Schweinitz and which you arranged to donate. Tell me about that.*

Duane: George de Schweinitz was the most famous ophthalmologist we had in Philadelphia up through the first half of the twentieth century. He was a graduate of the University of Pennsylvania Medical School in 1881 and was a professor of ophthalmology at Jefferson for eight or nine years before going to the University of Pennsylvania as professor in 1901. When he retired there in 1924, he was appointed as a professor at the Graduate School and was a consultant at Wills. He is the only ophthalmologist to have become president of the AMA. He was devoted to the Philadelphia College of Physicians and an annual lecture in ophthalmology is given in his name. From stories I've heard told about him, I don't hold him in such reverence. He sounds pompous and arrogant to me.

Hughes: *Why do you say that?*

Duane: Well, they say that when he was at the University of Pennsylvania, he told his staff that he wanted them all at the front door to greet him each morning, so they complied. He would pretend to be nonchalant about it. He would see his hospital patients and then pontificate. Nobody dared argue with him. Then he would depart for his office in center city. People came from all around to see him.

As I told you, I bought the records of a nephew of his when I started practicing in Bethlehem. The nephew told of an experience of his when he was training in Philadelphia. He was working with his uncle and went out for lunch one day. When he returned to the office, he was stopped by a big guy as he started to enter by a side door. "Where are you going?" he was asked. "Going upstairs–I'm a doctor–to see my patients." What's your name?" "De Schweinitz." The man said, "You're trying to bluff me. We are guarding de Schweinitz. He is upstairs seeing the president. You are borrowing his name, and you're going to see a patient?" The nephew talked his way out of it, got identified, got in.

When we moved out of Jefferson to the new Wills there was much to sort through from years long past. We found slides and notebooks carefully describing the slide material, written out by Dr. de Schweinitz in longhand. There was also a big box of an assortment of things which had belonged to him. There was one glass receptacle containing an eye with a piece taken out of it, but attached to the bottle was a glass slide of the tissue removed. Joe Waldman had found a picture of de Schweinitz in some obscure place in the college and taken good care of it. He also found some beautiful blown-glass painted eyes depicting pathology, which he had in his office for a while. We felt all this should go to the Academy museum, so had it packed by professional movers and

sent out to San Francisco. I have yet to see it. I haven't been to San Francisco for about four years. This darn Parkinson's has really handicapped me.

Affiliation of Wills Eye Hospital and Thomas Jefferson University Medical School

Opposition

[Interview 6: June 18, 1988]

Hughes: *I thought today you might like to discuss some of the difficulties that you encountered in arranging the affiliation of Wills Eye and Jefferson.*

Duane: Well, it's a long subject. I can only tell you how it occurred from my vantage point, which is biased.

Wills had an opposition contingent in the staff and board who felt very strongly that Wills had become a national champion and was well respected and liked by people in Philadelphia and outlying areas. Patients came from all over the world to Wills, and they treated a lot of interesting patients.

There are two things that I've noticed at Wills that amaze me. That is, they have this plethora of patients who have great faith in the institution. It's so old and venerated, you tell them you're going to take off their fingers and they would go along with it. They don't sue and fight and so forth. They're very cooperative. Of course, the Wills residents get used to that and some funny things happen.

Once we had a first-year resident from Atlantic City by the name of David Smith, a fine boy. He just had a sparkle in his eye all the time. One Saturday he was on duty in the emergency room. A man in his sixties came in with a profuse infection in his eyes. Dave Smith examined him and said, "You put these drops I'm giving you into your eyes three times a day. Keep your hands clean and away from your eyes. Come back here in a week." The guy said, "A week? I'll have lost my eyes by then!" "You come back in a week," Smith repeated firmly. So the patient returned in a week, asked to see Dr. Smith, and as he approached said, "I told you my eyes would be worse and I am mad that you made me wait all this time." The resident checked his eyes and said, "You didn't lose any ground. Keep doing as I told you before and come back Tuesday." The patient meekly replied, "Well, all right."

He returned Tuesday which was just a few days before Christmas. Before Dr. Smith could inspect his eyes, he got out an envelope and put it in the resident's pocket. His eyes were much improved by this time, but Dr. Smith said, "You're going to have to continue

using those drops and come back for another check after Christmas. Don't let up on the treatment now." The resident was busy for the rest of the day and only when he was changing his clothes to go home that night remembered the envelope. In it was a one hundred dollar bill! He made some inquiries about just who the patient was. Affluent people aren't customarily seen in the clinic, but this man just decided that he would use it. He even had a chauffeur wait outside while he was inside Wills. His treatment as a clinic patient was the best. There is a commitment of best treatment to all patients at Wills, no matter their social or economic status.

The other unique feature about Wills is that if an eye disease occurs in Boston or Seattle or Iowa City, it will be seen in only one or very few numbers, whereas at Wills they will see ten cases. Pathology walks in there. It's just fabulous, always has been, and always will be, I guess. I can't account for it. By the way, when Wills moved from Spring Garden Street to the Jefferson campus, the residents presented me with the massive brass door handle from the old Wills, mounted on a wooden plaque with the notation: "Through this portal 2,900,000 patients passed from 1932 to 1980."

So there was a contingent at Wills that said that Wills had obtained its position, and they didn't need the help of a university. They didn't want to join any university.

Prior Affiliation with Temple University

Irving Leopold was the first ophthalmologist-in-chief at Wills, and in the early sixties he had attempted a university affiliation. He had made some organizational changes at Wills which were badly needed but felt a tie to a medical school was very important to have a quality eye hospital. So an approach was made to four of the medical schools in Philadelphia–the University of Pennsylvania, Jefferson, Temple, and Hahnemann–to explore that possibility. William Sodeman was dean then at Jefferson and I urged him to make a strong pitch for us. But the wheels turned slowly, time rolled by, and Leopold left Wills for Mt. Sinai in New York City without any resolution of the project.

Then Arthur H. Keeney, an alumnus of Wills, came as his replacement. He had been a professor of ophthalmology at the University of Louisville College of Medicine. Keeney picked up the affiliation ball and ultimately the vote was to join Temple University. Temple was a state-funded school and the prospects for a new Wills Hospital to be built at their campus on North Broad appeared viable. Keeney was made chairman of the department of ophthalmology there.

Hughes: *That was a relatively short affiliation, I understand. Why do you think it failed?*

Duane: For one thing, the bag of gold at the foot of the rainbow, the "big money" the state would provide, did not materialize. The area on North Broad where Temple was located was becoming a tough, dangerous neighborhood. Wills definitely needed a new hospital, but this wasn't the place to build it. During a meeting of the Board [of Directors] of City Trusts held there, an individual had the wheels stolen off his car. It's a jungle part of town. I really don't know the details, but suddenly the affiliation was dissolved.

They had some excellent people in the department at Temple, and they have done quite well since Wills' departure under Guy Chan's leadership.

Orchestrating the Affiliation

Hughes: *Well, how did Jefferson win out on the second go around?*

Duane: Dean Sodeman, in the meantime, had left Jefferson, but I was able to get his original plans for the affiliation, which were very carefully thought out. When he worked on something, he produced a finished product. I had talked at length to an older anatomist on our faculty, who knew a lot about the history of Wills. He told me that before they moved to Spring Garden Street from Logan Square in the early thirties, they seriously considered moving across the street from Jefferson Medical College. But they decided that it'd be distracting to be near people making noise. So they deliberately took a place in town which was isolated, right across the street from the U.S. Mint and right next to a high school for bright girls.

At one stage when they were on Spring Garden Street, they had so many patients they couldn't house them all. So they took over a house across the street which had been built by a railroad tycoon, but he had long since moved out. The house had a lot of rooms and had become a whorehouse. Wills took it over and moved out the girls. Now, they're doing surgery on an outpatient basis. They don't use half the beds we've got. But that's another story.

To get back to Jefferson's "pitch": In the meantime, Jefferson Medical College had become part of a newly established Thomas Jefferson University. Despite being a private institution, Jefferson Medical College had always had large classes and the alumni were an unusually loyal and powerful group. Likewise, ex-residents of Wills Eye Hospital were devoted to their institution and were actively involved in its proceedings. Although there was opposition to any affiliation by some of active staff members, the younger alumni were very interested in it.

Hughes: *What were the problems with affiliating with the University of Pennsylvania or Hahnemann?*

Duane: Hahnemann was just a medical school; it was in trouble financially, and with its administration.

The University of Pennsylvania would have been a natural if the Scheie Eye Institute did not exist. The Wills people were not about to give up their identity.

Hughes: So how did you get them to come over to Jefferson? It looks like you had a pretty clear field by then.

Duane: Looks can be deceiving. First of all, to put things in order, we had personalities. We still have personalities to work around. And they'll be succeeded by other personalities. That's life. There were strong personalities on the Wills staff and alumni, on the Board [of Directors] of City Trusts which governed Wills, the Jefferson faculty and administration, all to be assuaged.

Jefferson was planning a massive renovation of the campus, including the building of a new hospital. They were sound financially and welcomed the addition of Wills Eye Hospital with its prestige and patient load. After many, many talks Wills acquiesced to the union. Somewhere down the line, Wills was to move physically to the Jefferson campus.

Reorganization at Wills

Hughes: How were the Jefferson ophthalmology department with its residency program and the Wills group to be integrated?

Duane: The merger took place in July, 1972. Both Wills and Jefferson had three-year [residency] programs with new trainees starting in July, two at Jefferson, twelve at Wills. In both, the basic sciences were taught pretty much by the staff over the first year. During the third year, the Jefferson residents spent scheduled time at places other than Jefferson in order to get surgical experience. They went to the medical center and veterans hospital in Wilmington, Delaware, and to San Juan, Puerto Rico, where arrangements had been made for their close supervision by active members of the American Academy of Ophthalmology. In turn, we had commitments to those places for "resident" assistance. Most of the residents liked the opportunity. We felt obligated to see that those three classes of residents follow through on that program, which was gradually phased out, and from then on there was just a combined group at Wills. Surgery was discontinued at Jefferson.

Art Keeney remained as ophthalmologist-in-chief [OIC] at Wills for a little over a year and then decided to return to the University of Louisville as dean of the medical school. He had instituted some good things, such as setting up vertical services, making eye visits more comprehensive with the initial visit, obtaining better

equipment, and redesigning the examining areas. Yet he met with strong opposition when he wanted to make Dick Green full time in charge of pathology, with the subsequent departure of Green to the Wilmer Eye Institute of Johns Hopkins, a sad loss for Wills. Keeney was interested in integrating optometrists with Wills, which was not well received. He somehow upset the residents to the extent that they formed a union.

Upon Keeney's departure, the Board [of Directors] of City Trusts and the trustees of Thomas Jefferson University, along with Dean Kellow, decided that in the future, the OIC at Wills and the professor and chairman of the department of ophthalmology at Jefferson would be one person. In the fall of 1973 I moved my secretary, Ellen Kalligonis, and the bulk of my records and correspondence to Wills where I was to spend three or four days a week and only one or two days at Jefferson. For the first several weeks I had a makeshift office in a windowless room used, as I recall, for taking fields. Keeney for some reason was in no hurry to leave the official OIC office.

I proceeded to get acquainted with the staff and administrative officers in an orderly fashion. I think the second day I was there, my good friend Robb McDonald, a stellar light for Wills, who did a great deal of his work at Lankenau Hospital, came into my cubbyhole and announced to me that one of the first jobs I must do was to get rid of one of the staff members who shall remain nameless. Much as I respected and revered Robb, that was something I wasn't about to do until I became better acquainted with the situation. That was only the beginning of an endless list of challenges at Wills. It wasn't long before I realized I had fallen into a hornet's nest. All was not calm and serene at Wills.

Building Wills Eye Hospital

Hughes: *Tell me about moving Wills to the Jefferson campus.*

Duane: Jefferson, as I think I mentioned earlier, was embarking on an updating, renovating program for the old buildings of the medical college and also planned to build a new hospital, which would have outpatient offices on one floor with the floor above that for hospital beds for each department. They unilaterally decided to put the Wills contingent on the two top floors. Well, the Wills people would have none of that. It would be a loss of their identity.

At first I thought it would be all right, but soon realized that it wasn't at all. I met with a large planning group from Jefferson–the university president, Dr. Peter Herbert, Dean Kellow, the architects, the hospital administrator, Dr. Frank Sweeney, the officer in charge of long-term planning and financing, George Norwood, and others whom I can't recall now. I made a suggestion of a free-standing building for Wills across the street east from the

new hospital-to-be with a bridge connecting them, as they were planning other bridges from the old hospital to the new, but they weren't open to any such suggestions. Wills was to be placed where they had planned. I went back to the committee at Wills and was informed that they would nullify the merger if that were the plans. So I faced the Jefferson group with that ultimatum and they were furious. This would really throw a monkey wrench into their plans for financing, then and in the future. Wills alone would have to finance the project of a separate hospital alone.

Hughes: Apparently, peace was made somehow.

Duane: It wasn't easy, let me tell you. I felt like a badminton bird being batted back and forth between two courts.

Hughes: Well, how was money raised for a separate Wills building?

Duane: The Board [of Directors] of City Trusts governs Wills. It is made up of political appointees who can have their appointments for life. They weren't to be shoved around. They could issue a municipal bond to pay for it, and the old Wills property was worth a fair amount of money. (I think they were disappointed in the amount it actually brought. It was quite a while until it was sold. It is now a luxury apartment house. The whole neighborhood is being upgraded.)

There were many other hurdles before we got around to planning the financing. Curtis Pritchard had been administrator of Wills for several years before I arrived on the scene, but retired soon after, replaced by James McGee, a former army officer of World War II. A finance officer, whose name I can't remember, stayed on. I had no way to judge the competency of these individuals at first, but it was not too long before it became evident that they had no idea how to plan for a modern eye hospital.

There were other in-house problems–with nurses, with public relations, with fund raising, etcetera–which were getting out of hand. When we tried to dismiss the new administrator, he had an emotional break, holed up in his office for a couple of days, refusing to go. William Cairo, the board member who was responsible for Wills, backed him to the end and finally retired in a huff from the board. It was something else down there!

This was finally resolved and McGee was replaced by a crackerjack of an administrator, a young chap in his thirties, David Joseph, who could really move and was amazingly knowledgeable and able to express himself well. I can't remember who recommended him, but he was a godsend. He knew how to plan for the physical plant, how to arrange financing, and did it all while straightening out the many other administrative problems of the place. He was simply wonderful to work with. I would have been lost without him. A

friend of his, Ed Ducat, I guess he was an engineer, kept tabs on the contractors' materials and workmanship, seeing that they carried out the architects' plans, etcetera, looking out for the welfare of Wills in this tremendous undertaking. His help was invaluable too.

Arranging for the underwriting of the bonds was some experience for me. We went over to New York City to talk with financiers and met with them in very posh offices. They were all business. I don't think one of them was over forty! Dave Joseph did most of the talking for us. I tried to ask a question or two and was more or less told by our attorney to stay out of it. I must admit I was out of my milieu! But we were able to get the necessary financing.

Hughes: *How did you go about planning the hospital building* per se?

Duane: Dave Joseph and I went around and looked at a few other fairly new eye hospitals–the Jules Stein Institute in L.A., Bascom Palmer in Miami, Mass Eye and Ear, and the University of Illinois–and tried to incorporate features we thought we might be able to use. We also had the input of the various chiefs of service and nurses. We wanted flexible partitioning so that major renovations wouldn't be a problem in the future. We wanted plenty of elevators, with ones for staff, housekeepers, inpatient moving, etcetera, separate and away from those for outpatients, visitors, and administrative staff. The design went through several revisions. We would be using virtually half a city block. For one third, we wanted a tower for operating rooms and beds, a second third, a horizontal area for outpatient waiting and examining areas, and the last third, a section for research separated from the clinical section.

Then we realized that we had not allowed for parking, which had been a problem on Spring Garden Street and would be more of one in center city. At first it was thought that it could be put underneath the hospital. There were a couple of counts against that. There was a river which ran underground in this area and fortifying against that would be a major problem, prohibitive. Space consequently would be entirely inadequate. The staff again really reared up on this issue. They said they wouldn't bring patients to Wills if there were inadequate parking. Not only would the space accommodate too few cars, but it would be too expensive to build underground. The upshot was that the research end of the building had to be sacrificed for a multilevel garage.

Hughes: *What did you do for research space?*

Duane: Research, not being a big priority with most of the staff, had to be fitted in here and there. I had my eyes on an empty lot which extends from the garage west to 10th Street and which would be ideal for a research building. It would also be large enough to provide low cost living quarters for researchers, who are notoriously

underpaid considering their training and life work. Julia says that idea would never fly, especially if the researchers have families.

Hughes: *What was the cost to build the new hospital?*

Duane: Around twenty-five million dollars.

Hughes: *Well, in one of your in-house publications, in describing the process of building the hospital, you said, "The building," meaning the new Wills Hospital, "is to some degree a compromise with what I originally had in mind."* What did you mean by that?*

Duane: I meant that I thought we'd have a research area that would be in contact with clinicians, instead of having the dichotomy and antipathy that exists in many places between the basic scientists and the clinicians. There's a big disparity in what they make in dollars. There are sociological problems with how PhDs relate to MDs.

Hughes: *Another quote by Thomas D. Duane: "We have constructed the biggest and most modern eye hospital in the U.S.A. and probably in the world."***

Duane: We had more beds and more everything.

Hughes: *And now those "more" beds are a problem.*

Duane: Yes, I was shortsighted in not anticipating the advent of mainly outpatient surgery. I should have realized, for instance, that when the postop care of cataracts changed so radically after I went into practice that it was the bell-ringer of things to come. I take full responsibility for that lapse in planning.

Hughes: *Well, how have they accommodated to the need for more outpatient surgery?*

Duane: They are working it out, but it's ersatz on the existing structure. The increased outpatient surgery trend has really occurred since my retirement as OIC in 1981.

Hughes: *What changes did you effect at Wills, other than moving to the Jefferson campus?*

Duane: I reorganized the outpatient service, for one thing. They had a different attending surgeon in charge for each day of the week. This was a senior person who became the attending physician for the new patients who came in on his day. He would supervise the residents and assist them in surgery, or do it himself with their

* News Bulletin, Wills Eye Hospital Society, February 1980, 2.

** Ibid.

assistance on "his day" patients. I did away with that and hired one full-time general ophthalmologist to be in charge. He was to be in close contact with attendings in the clinic so that the residents got the best teaching possible and better records were kept.

Hughes: *Whom did you pick for the job?*

Duane: I picked a chap in practice in New Jersey who had finished a residency at Wills in 1971 and who loved to come and work in the general clinic as a volunteer. He had been a veterinarian before becoming an MD. He happened to mention he wasn't altogether happy in private practice, and I approached him about this billet. He turned out to be a jewel. His name is John (Jack) B. Jeffers. He has recently moved on to become head of a newly created sports injury clinic at Wills after serving many years as attending physician for Philadelphia's professional sport teams. He has been a great asset. Also, the heads of the specialty services have been made full time since the affiliation. This increases their visibility both nationally and internationally.

The library at the new Wills was given more recognition through my efforts. I have a special love for books. I think they are a vital part of training programs. Unfortunately, the library wasn't allotted enough space in the new Wills, but it is a great improvement over the previous one. It has a few carrels and comfortable chairs for studying. Of course, the contents of a library and their availability to the student are of prime importance. I always resented the fact that when I was at Harvard, one could not browse in the stacks. Ed Norton's library at Bascom Palmer was a great inspiration for me, but I couldn't quite equal his.

breaking ground for new Wills Eye Hospital c. 1978

V. COMMITTEE WORK, MEMBERSHIPS, PUBLICATIONS, AND HONORS

Ophthalmic Research: U.S.A.

Research to Prevent Blindness, Inc.

Hughes: *Tell me about the study you did for Research to Prevent Blindness [RPB], which culminated in your publication of* Ophthalmic Research: U.S.A.*

Duane: Research to Prevent Blindness is a foundation in New York created by Jules Stein, a physician who did not practice medicine. He was head of the Music Corporation of American, Universal Studios in Hollywood, the Sheraton chain of hotels, and antique stores in New York City, among other things. He had graduated from medical school and after internship worked with Harry Gradle in Chicago, who was one of the outstanding ophthalmologists that practiced in America. (Dr. Gradle and my father were close friends, incidentally.) Stein had worked his way through school playing the saxophone.

I believe it was in medical school that he started managing dance bands, making arrangements for them to play at various places, mainly in the Midwest. He got so involved with this that Dr. Gradle told him he would have to do one or the other, learn how to practice ophthalmology or manage dance bands. Stein said, "I've earned next to nothing doing medicine and have made a fortune in

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* A national survey report by T.D. Duane, MD, PhD. Initiated and sponsored by Research to Prevent Blindness, Inc., 1965.

music already. I love ophthalmology, but I also love music, and I'm going to make money."

Many years later, urged by influential philanthropic friends, he formed Research to Prevent Blindness to promote research which would prevent blindness. Wealthy friends of his sat on the board of trustees, for instance, Mary Lasker.

Hughes: *Did they give money to departments of ophthalmology across the country?*

Duane: Yes, but they realized they didn't know their market. So they decided, wisely, to get an experienced ophthalmologist to advise them. It was a problem, as the top ophthalmologists were too busy.

Hughes: *And how did they find you?*

Duane: I had a friend and neighbor, Harold Thomas Hyman, who had semi-retired to Bucks County from a Park Avenue practice of internal medicine. He had all the carriage trade as patients. He was well regarded, having written all by himself a multivolume text, *The Integrated Practice of Medicine*, published by Saunders in about 1941. He had as a patient Mefford Runyon who knew Stein personally, was active on the board of the American Cancer Society, and, I think, was on the RPB board.

Well, I had just started at Jefferson in 1962 when Runyon told my friend, Hyman, that RPB was in need of someone to do this study. Dr. Hyman was a very forceful and influential person in New York and loved his role. He felt I would be just the one to do it. Next thing I knew I was being interviewed by Jules Stein and David Weeks, his executive officer for RPB. They decided that I knew something about ophthalmology and research and asked me to tackle the job for them.

I was intrigued with the idea but had made a commitment to Jefferson. I talked it over at length with Dean Sodeman who felt that if I did a creditable job for RPB that it would somehow add to Jefferson's status. I was to be given a year's leave of absence and possibly eighteen months. Hopefully I could give Jefferson some time periodically to begin plans for assuming my duties there. My salary was $25,000 a year (the base salary Jefferson had agreed to pay me) plus travel expenses, etcetera. Who would think of doing such a job for that nowadays? I just never could concern myself with the financial remuneration connected with my endeavors.

Conducting the Survey

Hughes: *How were you to conduct the survey?*

Duane: C.J. Van Slyke, a former deputy director of the NIH, had been hired by RPB to be their chief medical officer.

Hughes: *I read that he conducted a preliminary survey in 1960. Was he an ophthalmologist?*

Duane: He was an MD but not an ophthalmologist. He called up the three ophthalmologists that he knew and asked them what RPB should do. It wasn't a survey. I remember looking at it, and Stein's asking me what I thought of Van Slyke. I said, "I don't know the gentleman. From what I read of his report, I'm not very impressed." I did meet with him a couple of times and he gave me some ideas on how to go about things but on the whole did not contribute much. His health was not too good and he did not remain with the organization very long after my arrival.

I was considered a consultant to RPB. I was to go out into the field, identify the problems, and make cogent suggestions as to how they could be rectified. I could do the survey any way I wanted. There was no precedent. So I worked out a questionnaire and sent it to every head of ophthalmology in the country. I asked them all sorts of questions: How do you pick your faculty? How do you teach pathology? How do you teach surgery if you don't have much?

Hughes: *Did you get any help in composing the questionnaire?*

Duane: Yes. I went to a statistician with a national survey group in Princeton whom Stein contacted for me. He gave me some real help.

Hughes: *Did it prove to be a good questionnaire.*

Duane: I thought it was. Some of the department heads balked.

Hughes: *Why?*

Duane: Oh, they were busy, and they hated to sit down and write out all this stuff: How many square feet they had for research; what is the big research problem in the next century, the next decade; what's good and what's bad about your place; what would you do if you had unlimited funds? And so forth.

Hughes: *How was the response?*

Duane: They responded beautifully. They were worried about how they were going to support research and here's an outside agency coming in saying, "Just give us the dope, and we will help you solve your problems."

Hughes: *How did you choose the institutions to visit?*

Duane: I went to practically all the medical schools and to three or four places with no school affiliations, such as the Proctor Foundation.*

Hughes: Dr. Duane, when you were going around on this survey, did you find that people were very willing to talk to you and talk in detail?

Duane: Yes, indeed. They had done a lot of thinking about research, and they wanted to see the situation improve. They were delighted with Stein's interest, but they doubted that he could make much of an impression as a single person fighting the system. They thanked me profusely for being there, and they sent me little memos.

I'd take off Monday and go until Saturday, then return home. If I stayed through two Saturdays, I'd start going crazy. I wanted to be with my family and was sick of talking ophthalmology. I would go to a certain section of the country and try to cover multiple sites. Sometimes I would invite MD friends in the area I would be visiting to sit in on interviews. They weren't always eye men. One was a dean at North Carolina.

Hughes: Would they ask questions as well?

Duane: No, they'd just observe. I got pretty good at getting to the salient points, and I would have suggestions for them. I'd ask if they thought ophthalmology should be in with neurology in the NIH or should it be on its own. Should we cater to the study of circulation because there's a lot of money for circulation at NIH? Things like that.

Hughes: What do you mean by "cater to the study of circulation"?

Duane: Maybe stress experiments showing the effect of changes in the blood vessels on the brain and retina.

Hughes: Oh, you mean that's where the research money was. Why was NIH particularly interested in that subject?

Duane: Because the researchers at the NIH seemed to be anxious to get to the etiology and treatment of mental diseases.

Hughes: Were most people surveyed satisfied or dissatisfied with the status quo *in ophthalmological research?*

Duane: They were dissatisfied.

Hughes: What was their main complaint?

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* The Proctor Foundation is a component of the University of California, San Francisco.

Duane: Well, they built the National Institutes of Health because Congress felt that if you could put enough brains into a research project, you get the answer. For example, the atom bomb was developed by such a concerted effort. That suggested that if ophthalmology could be on its own, with just ophthalmic brains working on a project, they could do better.

Hughes: Was the question of whether a national eye institute was necessary a definite purpose of this survey?

Duane: Well, yes and no. That's a good question, Sally. As soon as I saw what was going on, it was perfectly obvious to me in about two weeks that that's what they needed. It ought to be the purpose of the survey.

Hughes: Had people been talking about the need for a separate eye institute before the survey?

Duane: Well, I don't know. They didn't talk to me about it. See, I went from private practice to Jefferson, and I left Jefferson within six months to do the survey.

Scientific Advisory Panel, Research to Prevent Blindness

Hughes: Dr. Duane, I read of a scientific advisory panel to Research to Prevent Blindness, and I will remind you who was on it: Francis Adler, Edward Dempsey, Sidney Farber, E. Cuyler Hammon, H.K. Hartline, Richard Masland, Ed Maumenee, William Prentice, Edward Tatum, and George Wald. How were those people chosen, and how active a role did they actually play in what became Ophthalmic Research: U.S.A.?

Duane: Those people were chosen essentially by me. I had an obligation to get a bunch of brilliant minds together, yet have them be reasonable. These men were very busy in their own fields. None needed prestige or money. All took on this assignment as they felt it was worthwhile. Some of them were personal friends of mine. Some were suggested by Mrs. Lasker or Meff Runyon. Three, Hartline, Tatum, and Wald, were Nobel Laureates.

Hughes: What were you expecting this scientific panel to do?

Duane: I was expecting them to be a muscle, to tell the trustees where they should put their dough. These trustees didn't want to misuse their money.

Hughes: The trustees were already in place when you came aboard?

Duane: No, not all.

Hughes: Who wasn't in place?

Duane: I can't remember.

Hughes: Did you have anything to do with choosing the new trustees?

Duane: No, I had nothing to do with that. They were either friends of Stein or had a lot of money.

Hughes: How effective were these two groups?

Duane: I think they were very effective. The monied group was open to advice from the scientists. The scientists took their responsibilities in earnest.

Hughes: What specifically did the scientific panel do?

Duane: They generated ideas on how to sponsor research. They were experienced enough in academic affairs that they knew what was practical and what wasn't.

Some guys are known as being great researchers but they're not paper writers. They may have a small bibliography, but it's all sound.

Optometry

Hughes: In this study did you consider including schools of optometry?

Duane: That's a good question. The answer is "no." I went to one quasi-optometric lab. I think it was in Ohio. They just did a little optometric research. They were nice guys and friendly, but optometrists have always been a problem to ophthalmologists. I'm much more mellow now than I used to be concerning them.

Hughes: Why is that?

Duane: Well, I guess I'm sick of the fight. I think an optometrist can do everything an MD can do except difficult diagnoses and effective treatment of the eye.

Hughes: What about surgery?

Duane: No, no surgery. They haven't had the training for that. I used to go around the country and talk against optometry.

Hughes: Why were you so rabid in those days?

Duane: Because I was in active duty, in the front lines, and I saw the effects and was confronted with the dilemma personally.

Hughes: What dilemma?

Duane: I would have people come to me and say, "If I give a lot of money to your school, will you hire John Doe, the optometrist?" There were nefarious schemes which I wouldn't buy.

Some members of the state of Washington ophthalmology society called me once to give testimony before their legislative body. I took a night flight, testified in the morning, and was on my way back home at noon.

Hughes: Testimony about what?

Duane: About the bill before the state legislative body giving optometrists freedom to do surgery and to use therapeutic drugs.

Hughes: That was recent?

Duane: Oh, no, that was when I was in active practice. I was called because I had a reputation for fighting against optometrists extending their care of patients. That's how I got into trouble with one of my own staff, Dr. Joseph Toland, at Jefferson. He had graduated from optometry school and then had gone into the army. After his discharge, he decided he wanted to go to medical school and be an ophthalmologist. He graduated from Hahnemann Medical School and then came over and asked for a residency at Jefferson. We were impressed with him. He talked well. He was nice looking. He had a good background. So we took him. In his first year as a resident, it was apparent that he did not know the nuances of refraction, didn't know anything about anatomy, physiology, and the basic sciences. But he was an average resident, and after completion of the residency, went into practice in an outlying section of Philadelphia, passed his boards, and was a volunteer faculty member in our department at Jefferson.

It came to my attention that he was traveling around the states, extolling the optometrists, saying that there was room for both ophthalmologists and optometrists in eye practice, and that the optometrists would keep the MDs on their toes. He appeared before the state legislature in Pennsylvania with this thesis in opposition to the Pennsylvania Academy of Ophthalmology. I saw him shortly after that in the clinic and told him that if he persisted in such activity, I would not reappoint him to our faculty. He indicated that he would not be stopping it, so I said, "Well, then you are fired. You and I don't have the same scientific standards and I don't want you teaching your ideas around here. I like you as a person but not as an optometrist." He went immediately to see Dean Will Kellow.

Kellow and I had deep respect for each other. He didn't know what to do about it. Then the fellow went to every member of the state legislature with a letter telling them exactly what I had said. He felt he should be allowed freedom of speech. Then the editor of the *Philadelphia Inquirer* wrote an editorial comparing the Russians' treatment of Solzhenitsyn to my treatment of Toland. I hit the ceiling!

I proceeded to call a meeting of the board of trustees of Jefferson to present my views. The president, the late William Bodine, asked me, "What's the gripe between you and optometry?" I started explaining what the difference was between ophthalmology and optometry. He said, "I'm not interested in that. I want to hear you tell me why we shouldn't have optometrists here, and if you don't like it, why you shouldn't go." I said, "I don't think that's fair." He said, "I don't care what you think." He went on to say that it was the consensus of the board that I should acquiesce or get out. The medical school received about seven thousand dollars support per medical student from the state coffers. The board wasn't about to be denied that by the philosophy of the professor and chairman of ophthalmology.

Hughes: *So what happened?*

Duane: So I thought it over for a couple of days and decided to give in to them. I didn't have much respect for President Bodine, but he throughout the years received many awards and honors for his participation in civic affairs and was held in high regard by most Philadelphians.

I looked up the term freedom of speech. Justice Holmes commented that one does not have unlimited freedom of speech. One can't go into a packed theatre and yell, "Fire! Fire!" when there is no fire. People would trample on one another with resulting loss of lives and injuries. When you know there isn't a fire, you don't have a right to say there is.

Hughes: *I want to quote from the introduction to* Ophthalmic Research: U.S.A: *"Ophthalmic investigators, in general, have found themselves near the bottom of the list in institutional planning, in government allocation of research funds and in private support of medical research."* Why did that situation evolve?*

Duane: Well, I don't know why. I do know that doctors practicing ophthalmology make a lot of money. It takes an awful lot of peculiar emotional and moral thinking to pass up all that potential money you could be making in private practice and work for the salaries they pay researchers. The guys that do it really do so

* p. 9

because they are not there to make money. They're there to help mankind, and they are there to find answers to questions.

Hughes: *What were the major conclusions of the survey?*

Duane: The chief conclusion was, there's an opportunity to do research [in ophthalmology]. If you thought it would be a good idea to do research in 1492, you could have all the proof in the world, but you couldn't do it. You wouldn't have the background or the equipment to do it. So not to do it at the end of the twentieth century is to be irresponsible. You owe it to society to conquer disease and suffering if you can. The goal of ophthalmic research is just that. It isn't a status thing. You take on a problem, work on aspects of it, and hope you go in the right direction.

National Institute of Neurological Diseases and Blindness [NINDB]

Hughes: *What was wrong with the old system in which eye was part of NINDB?*

Duane: Basically, the distribution of funds. The NINDB allocation varied from year to year by several million dollars. For three years precisely seventeen per cent went to ophthalmology. All the rest went to neurology and neurosurgery. I pointed that out to Stein and he really got upset. He said, "We've got to get out and get our own institute."

Hughes: *Why was it so lopsided?*

Duane: Well, because the damn neurologists had the inside seat. They had the institute. They had control of it administratively and financially. They wanted ophthalmology to fit into their scheme of things.

Hughes: *Why did it evolve that way?*

Duane: Mary Lasker was very interested in neurology and I think she was instrumental in getting the separate institute (NINDB). Richard L. Masland had been made the director. He had been head of neurology at Columbia, which had an outstanding reputation. He was a bit controversial but, on the whole, was well respected and well liked across the country, especially in Washington. Naturally, he saw to it that the majority of advisors for NINDB were neurologists. Ophthalmology just had to take a back seat.

There were many more neurologists doing research than ophthalmologists.

Testifying in Congress for an Eye Institute

Well RPB got busy and the upshot was that I found myself testifying for ophthalmology before Congress, that is, an appropriations subcommittee of the Department of Labor and the Department of Health, Education, and Welfare of the House of Representatives. John E. Fogarty was chairman. My close friend in Bethlehem, Fred B. Rooney, representative of Lehigh and Northhampton counties of Pennsylvania, introduced me. He's an Irishman who can really spread the blarney. It seemed to impress the committee, though.

Dan Flood, a colorful character from Scranton, Pennsylvania, sat across the table from me about four seats down. He spoke up and said something that I didn't catch, so I asked him to repeat it. Again, I didn't get it. Fogarty said, "He's asking how old you are." I said, "I'm fifty." Flood said, "You're well preserved." I said "So are you." I wanted to add, "But you have done it with alcohol; I do it with work." He had a reputation for hitting the bottle hard. I believe his constituents finally quit sending him to Congress.

I made a pitch for an increased share of the NINDB appropriations, and suggested we have a separate institute. The head of the NIH was opposed to any further institutes. He felt it just diluted the overall efforts.

Hughes: *Why had you been asked to testify?*

Duane: Because I was the most knowledgeable person concerning eye research. I had been all over the country.

Hughes: *Did any other ophthalmologists testify?*

Duane: Yes, Maumenee, Hogan, Straatsma, Cogan, Newell, and Kaufmann.

Hughes: *Who asked them to testify?*

Duane: I believe Dave Weeks, executive director of RPB. They represented most of the country.

Hughes: *Were you advocating anything other than the foundation of a national eye institute?*

Duane: Well, we said we wanted to have the ophthalmological research in the country correlated and organized.

Hughes: *Did the members of the subcommittee seem to be listening to you?*

Duane: Yes. Fogarty asked when I thought they should be separated. Flood said, "Do you mean you want a divorce or just a separation from the NIH?" He kept talking about it, quitting the NIH.

When the meeting was over, we went out into a little anteroom. Abe Baker from Minnesota started sawing on Dave Weeks and me. He said he had been fighting to get money for research, that we were selfish to only think about ophthalmology, that we were jeopardizing the whole gift to NINDB.

Hughes: Who was Abe Baker?

Duane: Abe Baker was a professor of neurology at Minnesota. He wrote a book on neurology and had a son in the field.

Hughes: Why was he at this meeting?

Duane: He was testifying for neurology allocations in the NINDB. The main reason I was there, too, was for funding for ophthalmology. I really had not prepared for a pitch for a separate institute. But when it came up, I could speak for it, so I just hit it.

Hughes: Well, what happened after that?

Duane: Fogarty was approached by Rooney who found him in favor of an eye institute. Fogarty had asked during my testimony whether this research institute would include optometrists. I said, "Yes, sir. This has to do with research, not clinical practice." (In the back of my mind, I seemed to remember that Fogarty's brother was an optometrist). "I think they have a perfect right to do research."

Hughes: What did your ophthalmological colleagues think of your stance?

Duane: They didn't know about it but they would have agreed.

Hughes: Who initiated the bill for a separate eye institute?

Duane: My friend, Representative Fred Rooney. It was ignored originally, but he kept reintroducing it. Support was garnered throughout the country largely through the efforts of RPB and finally it was a reality.

Hughes: Tell me about Representative Rooney.

Duane: Rooney was born and raised in Bethlehem, Pennsylvania. He was a vivacious guy, successful in the real estate and insurance business, interested in the political scene. He went to the state legislature at an early age where he quickly began to make his mark. I got to know him at the Bethlehem Club where professional and business men went pretty regularly for lunch. Some of the older men often stayed on after lunch and played cards, but that wasn't my thing or Rooney's. We did play golf together occasionally. I enjoyed his company.

Well, anyway, after a few years in the state legislature, he moved on to Washington where he again worked hard and steadily rose on the political ladder. I think he was elected eight times; he was there for at least sixteen years. He was a natural and year by year gained more clout. He really looked after his constituents. I was no longer in Bethlehem when he went to Washington, but we always stayed in touch. He was a Democrat. I was a registered Republican, having grown up in the Midwest, and because politics in my area of Bucks County has always been controlled by the Republicans. I never hesitated to cross party lines, however, in national elections. Rooney was finally overthrown quite unexpectedly by a high school teacher who was just entering politics, endorsed by the Bethlehem Steel people who pettily decided Fred was getting too independent.

Fred was in a state of shock at first, but many prominent people sponsored a huge party for him to show their devotion and appreciation of his efforts and I'm sure he would have had no trouble winning the next time around. However, once he got a taste of Washington life with no strings attached, he wondered why he had stayed as long as he did. He really knows the ropes in Washington and has no trouble making a comfortable living advising others without that know-how.

Hughes: *You sent every member of the House and the Senate a copy of* Ophthalmic Research: U.S.A. *Did you get any reaction from any of them?*

Duane: Yes, I didn't get it directly but RPB got a lot of miles out of it. People thought it was good. Ophthalmologists took it to deans, and the deans took it to the boards of trustees when they wanted to get support for ophthalmic research. It implied that you didn't have a good medical school if you weren't doing research.

National Eye Institute [NEI]

Hughes: *Okay, so the National Eye Institute was created and funded by Congress. How was the first director chosen? Did you have anything to do with that?*

Duane: Yes, we all did. We scouted around and came up with several possibilities. They asked me to do it, as a matter of fact, but I had no desire to move to Washington at that point of my life. Finally, they decided on Carl Kupfer.

Hughes: *What sort of a job is he doing as director?*

Duane: Pretty darn good. He and I have had our differences but we respect one another.

Hughes: *Did your relationship continue once the NEI was set up?*

Duane: Yes, for a while. Stein would have a luncheon meeting in New York City at the Music Corporation of American building on Madison Avenue where he had ensconced RPB with a small staff. These were held once a month and attended by the advisory group and the RPB staff and myself. He wanted to know what was going on in eye research that they might not be aware of. He wanted to police the research field in ophthalmology. He would figure out how much we ought to supplement NEI with private money. He also gave thirty schools ten thousand dollars each annually to use as they saw fit.

Hughes: Were you present when Lyndon Johnson signed the act creating NEI?

Duane: No, but I got one of the pens he used. They purposefully used several.

Hughes: That was August 17, 1968. How successful has the NEI been?

Duane: Well, I don't know how you measure it. Everybody has been more or less happy with it. NEI was responsible: It would build buildings when needed. It would provide equipment when needed. It would give money for salaries and sundry things.

Hughes: Were the appropriations wise?

Duane: Well, you can always have arguments about that, Sally. What one thinks is wise, another thinks is pouring money away.

Hughes: But in general, what do ophthalmologists think about the NEI?

Duane: Well, they think it's the government's duty to give out money for research and that it should be competed for fairly.

Hughes: Do you and other ophthalmologists feel that ophthalmology gets its fair share of the federal research dollar?

Duane: Yes, now.

Hughes: Do you attribute that to the creation of NEI?

Duane: Oh, yes.

*Hughes: Is there anything you'd want to say about the paper which appeared in 1967 where you wrote on the pros and cons of an eye institute?**

Duane: We were concerned that the public understood what we were trying to do. The public would be the professional as well as the lay public. We wanted them to know that we were sponsoring eye

* Duane TD. The pros and cons of an eye institute. Blindness, American Association of Workers for the Blind Ann, 1967, 35-9.

research to help mankind. It was timely and consistent with good medicine and good politics to do it. We pointed out the reasons why we wanted a separate institute, what it would cost, and why we should get it. I'm more convinced than ever that it was a good move at that time when I see all that has transpired as a result of its creation.

American Ophthalmological Society, 1966-present*

Hughes: *You mentioned that you used your blackout studies as your thesis for acceptance in the American Ophthalmological Society.** Tell me about the AOS.*

Duane: The AOS is the elite society of ophthalmology, a social and scientific organization. If you want to rise in academic ophthalmology, you've got to be a member. It's not easy to become a member. Two members must propose you and, once you are a candidate, you must write a thesis acceptable to a committee before you will be voted in. A lot of good men flunk that thesis. They also look into your competency, your moral and ethical background. Occasionally, someone is blackballed for personal reasons.

Hughes: *Who proposed you?*

Duane: James Allen of New Orleans and John McGavic of Jefferson in Philadelphia.

Hughes: *How did that come about?*

Duane: I always thought Dr. Frank Adler, who was long one of my heroes, had something to do with it. He told me once after I was made head at Jefferson that there were two things I must do–join the AOS and get on the American Board of Ophthalmology. I said, "You're talking to the wrong guy. I can't propose myself." There is a limit one member can propose each year and Dr. Adler probably had used his quota and asked Jimmy Allen to do it. Jimmy had returned after the war to Iowa to work on O'Brien's staff and we knew each other there. John McGavic is a respected ocular pathologist who had a practice in Rosemont, a Philadelphia suburb. He had originally come from Iowa but had been in the Philadelphia area for a long time. He was on our staff at Jefferson, a great contributor with a tremendous sense of humor and quick wit.

Hughes: *What is the procedure after one is proposed?*

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* For better continuity, the sections on the AOS and the American Board of Ophthalmology were moved from the transcript of the interview on February 2, 1988.

** Experimental blackout and the visual system. Trans Am Ophthalmol Soc 1966; 64:488-542.

Duane: Names are presented to a committee which decides whether the proposed person is to be asked to present a thesis. Membership is limited to close to two hundred. Each candidate is scrutinized individually. They used to have a fit if an ophthalmologist dispensed glasses.

Hughes: Did you ever take a stand on that issue?

Duane: I did to some extent, but I had mixed feelings about it. The fitting of glasses is as important as the refraction. There are some instances when dispensing in one's office is a real service to the patient. However, doctors who do it are often criticized because it is thought they are making money on it and may write unnecessary prescriptions.

Hughes: So you are proposed, write a thesis, and you're in?

Duane: No. There is a small committee of five or six members who review the papers. A thesis must be accepted unanimously. Each member reads all the theses submitted for a particular year. I served on the thesis committee. There is a deadline and it is very hard work. You read about twenty-five theses in two weeks, score them, and pass them on. A candidate can have something ready or is given two or three years to prepare one. I sent mine in with trepidation, but it passed.

Hughes: Were there comments on it?

Duane: Well, they sent the thesis back to me and had me eliminate proper names. They want the theses to be as anonymous as possible.

Hughes: Are you given guidelines for judging the theses?

Duane: No, but we try to judge whether it is valid research and they must be well written. They want to have the cream of the crop.

Hughes: Was your father a member of the AOS?

Duane: No, he was not in academic medicine.

Diplomate, American Board of Ophthalmology, 1947

Hughes: Tell me about your experiences in qualifying as a diplomate of the American Board of Ophthalmology.

Duane: My father came back from one of his postgraduate study trips in Europe and set up practice as an ophthalmologist. All of a sudden there was an announcement in medical journals that they were

going to certify ophthalmologists by examination. There was to be a grandfather clause for a limited time which would exempt older physicians from taking a qualifying examination if they had been in practice for a long time, or a watered-down exam if they hadn't been practicing all that long. My father said, "Why the hell should I bother with this? I'm as busy as can be. I'm happy and what's a certificate going to do for me?" So he didn't take the exams. Then they removed the grandfather clause, but he still could not be bothered taking exams although he was very knowledgeable and would have had no trouble passing them.

Hughes: Did it hurt him in any way not to be board certified?

Duane: No, it didn't hurt him at all, except he said he had trouble getting into the Academy. He had professional, social, and personal ties with most the "wheels" of his time. However, he told me he thought he made a mistake. Apparently, deep down he never felt quite on a par with his peers who had taken the exams, although he knew just as much as they and practiced first-class ophthalmology. So I remembered all of this. It was a *sine qua non* that I was going to take the eye board exams. I just wouldn't be an ophthalmologist without them.

I took the boards in 1947 upon completion of my residency. A great many ophthalmologists, most of whom had been caught up in the war service and were rather rusty, were taking them, too. At that time the format of examination was different from subsequent years. There was no preliminary written exam which weeds out a certain number of applicants. My exams were held in Philadelphia and Atlantic City. The first day we had to go over to Atlantic City where we had individual oral interviews by two board members examining together. My examiners were Drs. [Frederick C.] Cordes and [Derrick T.] Vail [Sr.]. The session lasted forty-five minutes. We returned for the result at five P.M. and were handed an envelope. Some guys, there with their wives, were crying because of bad news. My wife wasn't with me, but I passed–fresh out of my residency, of course.

I was instructed to return to Philadelphia and report at the Wills Eye Hospital on Spring Garden Street for a "hands on" examination of eye patients, representative of about ten different services. One patient had a normal eye as far as I could see, but Dr. Dunnington of New York pointed out a nick in his eyelid, a partial coloboma which I completely missed. He said with a smile, "I'm not sure I should pass you," and sent me on to the other services. It was an inauspicious start, but I did better with the rest and again passed.

Hughes: Had you studied for the board exams?

Duane: Sure. I studied at home. I studied like hell.

Hughes: *For how long?*

Duane: Oh, I was reading all the time. I wasn't a great scholar. I knew I had to learn it. However, I didn't try to study on the night before the exams. I didn't take any texts with me to Philadelphia. I stopped off enroute from the train station in north Philadelphia to the hotel in center city and bought two tickets for a baseball game that night. My taxi was passing the stadium and the driver asked if I would like to stop and get a ticket. It turned out that Connie Mac himself sold me the tickets and helped me figure out the best place to sit. I recognized him from his pictures. As I left I said, "Thanks a lot, Mr. MacGillicutty!" He smiled.

When I got up to the room in the hotel, I found my roommate studying like crazy from a whole set of Duke-Elder. He wasn't about to go to a baseball game with me. So I left and thought I'd give it to a serviceman. There were many on the street. I was looked at askance and had no takers. Finally, I asked a policeman to try giving it to someone, preferably a serviceman. I treated the guy who came to the game but didn't let on that I had purchased the ticket. The game was good. Bob Feller pitched for Cleveland and injured himself, the result of which I think kept him from going to the heights in baseball he might have.

I got back to the hotel room and found my roommate still into the books. I went to bed. I must admit I was never so spastic over anything in my life as I was when I arrived in Atlantic City for the first part of my exams. I was just beside myself. That's the way too many of the candidates felt when I served on the Board. It is a very stressful time for some, despite all they have accomplished–going through college, medical school, licensing, setting up practice, and the likes.

Member, National Advisory Eye Council, 1978-1981

[Interview 7: June 19, 1988]

Hughes: *Dr. Duane, on April 3, 1969 the National Advisory Eye held its first meeting. Were you there?*

Duane: No, I was not.

Hughes: *Why weren't you on that first council?*

Duane: They didn't pick me. Just as simple as that. I didn't get on for quite a while.

Hughes: *Were you interested in it?*

Duane: Yes. After a while they ran out of the usual candidates–Maumenee, Blodi, Newell, Straatsma–there were about ten guys in a clique. I wasn't part of it. I came to academic ophthalmology late. I had had ten years of private practice in Bethlehem, which I think qualified me well for teaching residents because I knew what to do with patients on the hoof, so to speak.

Hughes: So as far as the clique was concerned, those years in private practice didn't count for much?

Duane: I wouldn't say that. They had been together many years so knew one another, but they didn't know me.

Hughes: Why were you appointed eventually?

Duane: Because I became known.

Hughes: Do you remember when you were appointed?

Duane: It was about ten years ago. Ed Norton and I were appointed at the same time.

Hughes: Do you know who was responsible for appointing you?

Duane: Carl Kupfer.

Hughes: He appoints all the council members?

Duane: Yes.

Hughes: Do you remember who was on the council?

Duane: Yes. Ed Norton, Herb Kaufman, a physiologist by the name of Brown from the San Francisco area.

Hughes: Why was he appointed to the council?

Duane: He was a basic scientist. He did research on ocular tissues and was highly respected around the country.

Hughes: Anybody else?

Duane: Yes. Tom Tredici representing the air force, possibly another fellow representing the navy, and an optometrist, dean of an optometry school somewhere, whose name I can't recall.

Hughes: The optometrists had been involved from the very start, had they not?

Duane: Yes.

Hughes: *Whose decision was that to include the optometrists?*

Duane: Well, I don't know, but I imagine Fogarty. His brother is a prominent optometrist in Rhode Island.

Hughes: *Did you approve of that?*

Duane: Yes. As I said yesterday, I have no objection to an optometrist doing research if he's a good researcher. When the average optometrist is seeing patients, I have very great reservations about him. That's just the way I feel.

Hughes: *What is this council supposed to do?*

Duane: What the council does is set policy and go through all grants that the NEI makes in the period that they are governing. You are sent a confidential packet of all the research proposals in glaucoma and cataract and so forth. You have to go through them, decide whether they should be funded at all, and if so, do they deserve the amount they asked for or should they get more. It takes a lot of work. When you arrive at the meeting arguments start. You state your case, others give their opinion, some act as the devil's advocate, compromises are made.

Hughes: *Does the NEI set any guidelines?*

Duane: The main thing you consider is the intelligence and integrity of the investigator. Another thing is the reputation of the school or research lab he's doing his work in. They've done very well at the NIH. They have about six Nobel Prize winners.

Hughes: *Do you think the system works pretty well?*

Duane: Yes.

Hughes: *What would you do if you didn't know the applicant?*

Duane: Sometimes we'd go out and ask about him or do a site visit if it concerned a lot of money.

For example, Mt. Sinai Hospital in New York City put in for a hyperbaric chamber. When I was in the navy, they had a hyperbaric chamber about the size of a dog house for a Great Dane. The doctors at Mt. Sinai had a theory of operating under hyperbaric pressure. It would be very costly. The NEI sent me as the consultant as I had published a paper on a related subject. Irving Leopold, a good friend of mine, was head of ophthalmology. He is a very smooth and able person. He would wink and say, "I have a great experiment here." I winked back and said, "But I don't think

you should have it. That amount of money should be placed in a half-a-dozen other places."

Hughes: *You thought it was too much money for one project?*

Duane: Yes. Well, I didn't think the setup was one I would recommend.

Hughes: *Did you vote against it?*

Duane: Yes.

Hughes: *And what happened?*

Duane: It didn't go through. That's one of the ways they check. If it was a request for $15,000 for an addition to his computer or a laser or something, they wouldn't make a site visit.

Hughes: *When a site visit was made, did the whole council go?*

Duane: No, just a representative or two.

Hughes: *And then he would report back to the council?*

Duane: Yes. It was a busy year or two for us, even though they spread out the site visits.

Hughes: *Did you read all the applications carefully?*

Duane: Oh, yes. Sometimes we'd ask fellows who had received NIH grants or had been on the council what they thought. The system is good.

Hughes: *I saw a reference to panels in connection with the council. Is that the same thing as a study section?*

Duane: I think study sections were sources of information gathered by full-time NEI personnel for the use of the council members. I think panels were made up of persons from various disciplines brought together to work on certain projects.

Hughes: *According to my notes, there are study sections which are roughly comparable to the subspecialties in ophthalmology–retinal and choroidal diseases, corneal diseases, external diseases, cataract, glaucoma, visual impairment and rehabilitation, strabismus. Perhaps there were more.*

Vision Research

Duane: Well, I edited a book for the NEI which covered the study section. It was called *Vision Research.** I was chairman of a group of council members and others who served on a committee called the Program Planning Subcommittee which tried to cover all the bases, including optometry. It was the decision of the NEI that they would not put out a great big book this time with three-fourths of it not relevant to the superspecialist. A guy who works on cataracts doesn't care about squint. So we thought if we had small individual reports–pediatric ophthalmology, glaucoma, cataracts, etcetera–a fellow could get the particular volume of interest to him, and it wouldn't waste the government's money.

Hughes: These publications that you're talking about are part of a series that the NEI puts out periodically?

Duane: No.

Hughes: What was it then?

Duane: Every six years they do a report on what's going on in the institution and where they should go now. I'd written a book on eye research (*Ophthalmic Research: U.S.A.*) and they thought I would be good to do a similar one for the NEI. I did the job but my heart was not in it; it was a lot of hard work. Now, I don't even want to look at it.

Hughes: What is the book about?

Duane: The book is about the status of research at that time and how it was going to be five years down the line as we saw it.

Hughes: Did you make any suggestions about what NEI should do?

Duane: Sure did. We made a lot of them. We thought some of the things they were doing were a waste of time. For instance, a girl–she was a basic scientist–married another basic scientist at another school of the university. The committee wanted to unite them and give them money for research but they didn't know how to do it. I was half asleep at the table when they said, "There's a big problem. She specializes in bird research and he in aquatic animals. What do we do?" I awakened and said, "Let them work on turtle doves!" That livened things up!

Hughes: Where were you getting data for this book?

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* *Vision Research: A National Plan, 1983-1987,* U.S. Department of Health and Human Services, Public Health Services, NIH, 1983.

Duane: Oh, they had a whole team assigned to it at the NEI. A chap who knows how to collect data, another who does mathematical analysis, one who does the writing, one who coordinates, etcetera. But it was still a lot of work for me.

Hughes: Did it make a difference? Did people pay attention to the book?

Duane: I don't know. I never got much feedback.

Hughes: Was this something that you were expected to do as chairman of the council?

Duane: No, they begged me to do it. When I acquiesced, Ed Norton said, "Oh, great! I won't have to do it. You will."

Ocular Melanoma Task Force, 1979

Hughes: You were chairman of another project for NEI–the Ocular Melanoma Task Force. How did that come about?

Duane: Many applications were coming into the NEI to study ocular melanoma, so they called this panel together. [Because of my son Andy's melanoma] I have continued to have a special interest in melanoma. I probably talked at the NEI about my own experience, hence my selection to be on the Melanoma Task Force.

A young woman by the name of Bettie Graham had done a lot of groundwork on melanoma. She really should have been the chairman. She was a hard worker and self-effacing. I still think she was cheated out of recognition for her work.

Hughes: Do you know how the other people on the task force were appointed?

Duane: I think I appointed them.

Hughes: Well, just for the record, why don't we mention the people that were on the task force?

Duane: There was Dan Albert, ophthalmologist from Harvard; Wallace Clark, dermatology pathologist from Philadelphia; Cristina Leske in preventive medicine at a medical school on Long Island; Donald Minckler from Doheny; Larry Nath and Bettie Graham, science investigators from the NEI.

Hughes: Was it a good group?

Duane: Yes, excellent.

Hughes: What did you do?

Duane: First, Bettie Graham went through the literature, summarized it, typed it, gave it to everybody that was on the committee. That was a great deal of work. We then set up policy, a road map for the way to go. We debated everything, fought, and had a good time.

Hughes: Can you give me an idea of the substance of the road map?

Duane: Well, we said analysis of the diagnosis and treatment of melanoma should be done in the statistical department of a university. They might have a correlated study on melanoma, measuring size, photographing the lesion; then put some patients in "drydock" and operate others. We were enthused about it; it was a positive thing to do. I then wrote up a report and sent it around to all the panel members and they okayed it.

Hughes: Had there been a lot of confusion about the treatment of ocular melanoma?

Duane: There still is. There is not a solid approach to it to date, to my knowledge.

Hughes: One of the things you were advocating was the correlation of data from different institutions, which implies that up until then people weren't sharing data.

Duane: That's correct. It got down to where they were making suggestions and changes on their grant applications the night before they were due.

Hughes: Did the report help to facilitate coordination of results?

Duane: I can't answer that, Sally. I haven't followed it.

Hughes: Another of your recommendations was to describe the natural course of melanoma by following a large number of cases, and the task force recommended having one group that was going to be treated and one group that wasn't.

Duane: Right, picked at random.

Hughes: Aren't there ethical implications?

Duane: No. This is a field unknown. You don't know what causes melanoma and how it's going to go in any one patient. The course of a melanoma can be benign to highly malignant. Collaborative studies should certainly be done but there seem to be too many prima donnas or enthusiasts in the field who interfere. The latter are so enthusiastic that they lose their sense of balance.

Hughes: *How would you feel if you were diagnosed with ocular melanoma, and the ophthalmologist said, "Well, we're just going to wait and see what happens. We're not going to do surgery."*

Duane: What he would say is, "We don't know whether taking this eye out now will prevent the melanoma from spreading later or not. You have two choices: You can leave it in and take your chance. You can have it operated, but it might be needlessly operated because the melanoma might grow back. We simply don't know and can't predict an outcome." A patient must sign a permission slip in the presence of witnesses who have been in on the discussion. The patient must make his or her own decision, not the surgeon.

Hughes: *The way I read the task force's recommendation was that the ophthalmologist was deciding this person shall be operated, this person shall not be operated.*

Duane: No. A tiny melanoma can't be compared to one that fills up the whole eye.

Hughes: *So the two cases have to be comparable?*

Duane: Yes. It may be a certain size tumor and the surgeon gets the nod to operate and he does. They roll the dice otherwise. Patients can find out on a national basis that they are getting recognized treatment.

Hughes: *So they are privy to the results of the study?*

Duane: Oh, yes.

Hughes: *How were the institutions picked where these studies were conducted?*

Duane: Well, that's always a problem. Some of it is political. It should be academic with good pathologists or good physiologists. They might look good on paper but not be good in actual practice.

Papers

Superficial Keratitis, 1959*

Hughes: *In 1959 you wrote a paper called, "Superficial keratitis due to plastic foreign bodies."** Do you remember that?*

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* For better continuity, this section was moved from the transcript of the interview conducted on February 2, 1988.

** Arch Ophthalmol 1959; 61:141-143.

Duane: Yes. Driving into Bethlehem to my office from my home, I passed a building where they manufactured lingerie. I began getting as patients women who worked there. They complained of scratchiness in their eyes, and they had been seen by several ophthalmologists in the Lehigh Valley who couldn't figure out what was the matter. I looked at them with the slit lamp using retroillumination and found their corneas peppered with some sort of clear particles. These were easily removable with moistened cotton. They were not imbedded.

The factory manager took me out to the workrooms and we found that all the women who had been affected were cutting a plastic material to make stiff underskirts. The problem was solved by having them wear protective goggles for this procedure.

I took one of the women down to Philadelphia to the ophthalmology department at Penn and was able to have a gal there, who was a good medical illustrator, draw a picture of an affected cornea. It was fun working out the puzzle.

Research on Twins, 1965

Hughes: *Dr. Duane, in 1965 you published a paper in* Science *on extrasensory electroencephalographic induction between identical twins.* How did you get into that kind of research?*

Duane: We had an experiment going where we studied photic driving in an individual, and we were seeing what we could do with it. I was working with three or four doctors then who were sound people. I had been to a meeting where they had discussed photic driving and what it means. They also talked about other electroencephalographic phenomena and I became intrigued. I kept thinking about it for several weeks, during which time I took the family on a vacation to the Caribbean. We sailed for a week on a fifty-foot ketch with the owner/captain and a young man as crew, so I had lots of time to think.

One thing that popped into my mind was that there must be some way that identical twins express themselves when one's in Peoria and the other's in Stratford-on-Avon when one gets a headache or is in an accident and the other one'll feel it. I put photic driving and ESP [extrasensory perception] together.

Hughes: *Had anyone else done that?*

Duane: I don't think so but I had had no chance to check the literature. I just talked with Tom Behrendt about it. He was a brilliant young

* Duane TD, Behrendt T. Extrasensory electroencephalographic induction between identical twins. Science 1965; 150:367.

ophthalmologist in the department at Jefferson who, as I said, had grown up and trained with his father in Brazil. His father had left Germany to live there when Hitler was taking over Germany.

Tom knew a great deal about electricity and electronics and how to set up equipment. He set up encephalographic equipment in two separate rooms. We then enlisted the help of identical twins who were senior residents on orthopedics at Jefferson. It was literally their last day in the residency, and they were not the least bit interested in our pending experiment but happily agreed to give us fifteen minutes.

We put them in the separate rooms, Behrendt monitoring one, I the other. We gave a photic driving stimulus to one eye in one of the twins and we got it on both sides.

Hughes: *What was the stimulus?*

Duane: A flashing light. There are certain people who get a change in their electrocephalogram when you flash a light in their eye. That's called photic driving if it becomes rhythmical.

Hughes: *Only some people do this?*

Duane: Only some.

Hughes: *Why is that?*

Duane: I don't know. Some people have untoward reactions to flashing light. We had a nurse who tried to retune her television which had bright diagonal lights flashing. She experienced an epileptic fit. A pilot was flying along a row of poplar trees–you know, they're rather thin and tall. The sun was on the other side of them. So he saw this sunlight flashing and he, too, had a seizure piloting the plane. Some have fits; some just get sick to their stomach; the majority don't have any symptoms.

But to get back to our twins: The second twin, hooked up to an electroencephalogram, did not receive the light stimulus, but his EEG showed photic driving. We did it several times but began having technical difficulties after a while. I thought it was fascinating.

I had read a little of L.E. Rhine and his ESP work down in North Carolina, just out of general interest, never in depth. I thought we had done an experiment documenting his thesis.

Although it was only one case, I decided to send a report to *Science*. The editor had a reputation for being very strict about what was published. It was said that if you sent a paper in to him, he'd send it to two world experts in the field. I wrote him a letter. I didn't write a paper. Next thing I knew I got a proof of "Extrasensory

electroencephalographic driving between identical twins," by T.D. Duane and T. Behrendt.

Hughes: *Oh, so you mean you didn't write it up as a paper?*

Duane: The editor wrote it as a paper and he didn't sent it to anybody [to review]. He knew as much about ESP as anybody else. Well, it caused a lot of attention, even hit the newspapers.

Hughes: *What did the ophthalmologists think?*

Duane: I don't think many read it, but those I talked with thought it was fascinating. The editor began publishing letters of criticism. One guy said it would be the greatest discovery of the twentieth century if they verified it. He didn't think it would stand verification.

Hughes: *According to the paper in* Science, *Dr. Duane, you found extrasensory electroencephalographic induction in two pairs of twins, and you tested thirteen pairs. Why didn't you see induction in the other twins?*

Duane: It is an uncommon biological phenomenon which doesn't show up in everyone. Since then, there have been papers that photic driving can be done voluntarily by the subject. I don't know whether that's true or not.

Hughes: *You also mentioned that the thirteen pairs that didn't show the rhythm were anxious and apprehensive about the testing procedure.*

Duane: That could be a factor. Also it was difficult to establish with certainty that twins were identical. Well, of course, today there are sophisticated methods to do it, but in the mid-sixties we couldn't without doing skin transplants. Of course, we didn't attempt to do that. I didn't think it was right.

Hughes: *Did you do anything more with this research?*

Duane: Yes. We talked with the U.S. Intelligence Service which was interested in the possibility of sending message via twins, a type of communication that could not be interfered with. They thought it was worth exploring so they gave us $150,000 with which to equip a lab. I took it with trepidation. We couldn't guarantee that it would work. We were to keep their involvement in strictest confidence. Their names were not to be used in any public reports that might be forthcoming. We were sorry that the editor had made a paper out of our letter. What we wanted was priority and to get people thinking about it, have documentation. The response was more than we anticipated, and we were glad to have it. Some of the scientists got mad at the editor. They said he wasn't an ESP expert, that he didn't know Rhine, and that neither did I. Rhine was controversial. Our work indicated that he might be right.

Well, we got the money; we got the lab. We rented two floors in a building near Jefferson where Behrendt set up a giant computer (by today's standards) and connected it to EEG machines. He got an elderly electronics expert to help him and the two spent long hours night and day on circuitry. They were trying to set up a method of analyzing signals. It was too esoteric for me. I got no satisfactory answers to my simple questions about how signals got from one room to another.

Hughes: Did you hire any other helpers?

Duane: Yes, technicians and medical students for testing. We had a pretty high priced show going on. I kept telling Behrendt, "Let's get recordings on twins. That's all we have to do." We didn't need to polish the signal to the tenth degree. I couldn't get him moving off the equipment. I worried about our image if we stayed in this controversial field. It was considered secret research. After World War II, there was a movement in universities to not engage in research that is secret. "It's not the American way." Well, I think that's a lot of bunk. When Andy went to Quantico for his FBI training, they were told to be careful about making telephone calls. The Russians were said to have all the phones bugged, listening for disgruntled trainees who might defect. The academic world must address our security as well as the government.

So I told Behrendt that after he sent reports of our work down to Washington and after we did what we said we would, we were not going to do any more ESP research.

Hughes: How long did you do the ESP research?

Duane: About a year.

Hughes: You tested more twins?

Duane: Oh, yes.

Hughes: How did you find the twins?

Duane: We advertised for them. There's also a national organization of twins, with local chapters.

Hughes: How many sets of twins did you test?

Duane: If you don't hold me to it, about one hundred.

Hughes: That's a lot. Did you ever find induction?

Duane: Yes, we found it, but we weren't sure. Finding induction sounds simple, but it's difficult to decide when two sets of EEGs show induction. One can see the changes on the EEGs, one can see

obvious differences, but if one is just a very little different from another, is it significant? I am not an expert on EEGs and don't want to spend my time trying to be one. I was unable to find such a knowledgeable person to help in the interpretations.

Hughes: *So you abandoned the research?*

Duane: Yes.

Hughes: *Was your sponsor upset?*

Duane: Well, we told them we didn't think they were getting their money's worth. The dean at Jefferson did not know what we had been doing. Nobody knew except those involved. Then one day two investigators from U.S. Intelligence came to see the dean, who then sent for me. They wanted to see all our files, particularly all correspondence, ingoing and outgoing.

Hughes: *You mean letters coming in about this project?*

Duane: They wanted to remove any evidence which might refer to their involvement before the "do-gooders" got there. The do-gooders were saying we should not be doing secret work. Our ESP experiments were suspect in the scientific world. I couldn't afford the time to become more knowledgeable on the subject and do my duty to Jefferson. I had a responsibility to guard Jefferson's name and reputation. As it was, a professor of physics at Princeton University came to talk with us.

Hughes: *What was he hoping to do?*

Duane: They wanted to find out if our research was bona fide or not, if we could really induce change in the EEG. Secret research was a bad word after World War II, and ESP was a subject that people were always on guard about. Physicians worry about research–whether it's cogent, honest, decent, or helps mankind. That's what they should do. Some people take advantage and do all sorts of terrible things.

Hughes: *You mean terrible in the sense of unethical or terrible in the sense of unscientific?*

Duane: Most unethical things are unscientific, too.

Hughes: *What were you meaning when you said that?*

Duane: I meant that they would take advantage of the vulnerable position they put the Intelligence Service in. I knew ESP was a controversial subject. I don't know whether there is anything to it or not. In a sense, I don't care. I do care, but I'm mainly curious. I'm not going to do anything with it. They're going to send a

message to a person. I'd like to know if he received the message and how he received it.

I have a theory I haven't told anyone yet. The fastest thing in the world is light–186,000 miles per second. You must have some particle that goes through the Earth. I think it may be neutrinos. They have no mass and no charge, they say. But then they say an excess of mass that is out in the universe can best be accounted for if it's all neutrinos. I am spending a lot of time these days in reading and trying to get a handle on stuff such as quantum physics, relativity, random selection, wave mechanics, chaos, etcetera.

But I'm digressing from the twin project. The two men spent a week combing our records.

Hughes: *How did you feel about that?*

Duane: I told them we weren't hiding anything. They just asked us to keep it quiet with the executive faculty when we talked about research. I could understand their position. Do-gooders annoy me.

Hughes: *So that was the end of your twin research project?*

Duane: It only went that far. I couldn't find anyone I had confidence in to interpret or explain our EEG findings. The project went on hold, and we never got back to it.

Valsalva Hemorrhagic Retinopathy, 1972

Hughes: *You published a paper in 1972 entitled, "Valsalva hemorrhagic retinopathy."* Tell me why you became interested in this condition.*

Duane: Well, of course, we saw hemorrhages clinically. Hemorrhages evolve from many things. They may come from the arterial side of the circulation or from the venous side. They also come from changes in the capillaries that connect the two sides.

I decided that the hemorrhages that occur in an eye on the basis of stress in the venous system had to go through a certain sequence of events, and blood had to be in a certain anatomical position. It had to be below the carotid/ophthalmic artery junction, had to be above the heart, in order to get the Valsalva effect.

The Valsalva effect occurs when you close the glottis and build up intrathoracic pressure. This causes a rise in the jugular vein pressure which extends up into the eye and, when great enough, causes the capillaries in the eye to burst with resultant hemorrhages. It's seen in such situations as lifting a heavy object, having difficulty moving your bowels, blowing up a balloon, being

* Trans Amer Ophthalmol Soc 1972; 52:289-313.

hanged, and it is also seen in some newborns. Valsalva was an Italian anatomist who first described the hemorrhages and their etiology. The hemorrhages have a certain characteristic appearance. They're superficial, striate, and there are many of them.

We had a patient, a black man, who was doing something with Christmas ornaments in the summer and cut his hand. As the cut healed, his third finger was pulled down into an annoying position. He went to a hand surgeon who said he could fix it. Before that he had come to the eye clinic at Jefferson for glasses. A resident refracted him, dilated his pupil, and examined his fundus. He noted pigment all over the posterior pole, typical in blacks, which he described and put in the record, saying the eyes were okay.

At the time of the elective hand surgery, the chief of anesthesiology was in the OR with a visiting anesthesiologist. He said to the visitor, "We intubate every patient but you don't have to. You hold their head a certain way and do certain things. I'll show you." He put the patient to sleep and did not intubate him. The surgery was begun and the patient started turning blue. An attempt was then made to intubate him which the patient fought to the extent that he convulsed, but they did get the tube down.

The next day the orthopedic resident was checking on the patient who said, "I've got two things wrong with me. My hand doesn't bother me at all, but my throat is really sore and I can't see well." The resident reassured him that that was typical twenty-four hours after surgery. The following day he was discharged. His sore throat had improved but he still complained about his vision. The orthopedic resident told him that would take about a week to clear up. The patient returned to the eye clinic two days later wanting to see the doctor who had refracted him. Our resident took a look into his eyes and about fainted. It was full of hemorrhages in both posterior poles. It was from the strain at surgery. That was our first case of clearly recognized Valsalva hemorrhagic retinopathy.

Another case was a doctor's daughter who went riding on a motorcycle with her boyfriend. They fell over in front of a car. The car ran over her chest. She was unconscious when picked up but had closed her glottis when the car ran over her chest, putting sudden weight on it. She had bilateral hemorrhages. Having had the previous case, we recognized the etiology and could reassure her that it would clear in time and no treatment was necessary. The hemorrhages are superficial, have a characteristic color, and are striated.

Hughes: *Why are they striated?*

Duane: Because they are in the superficial layered tissues that are running from the periphery of the eye to the center, about a million fibers that form the optic nerve, creating cracks so to speak. If you have

seen one of these cases, you've seen them all. You can tell by looking at the patient's eye what has happened.

Hughes: *You also mentioned in this paper "Purtscher's retinopathy." From my understanding, you were trying to differentiate what you were seeing from Purtscher's retinopathy.*

Duane: Well, yes. They're a different animal.

Hughes: *What's the difference?*

Duane: Well, retinopathy due to distant trauma was described by Otmar Purtscher in Austria early in the 1900s. He discovered that a person could have had a fracture–distant trauma–with no direct injury to the orbit. Emboli form, pass through the bloodstream, and lodge in the eye. What these lesions are is debatable.

Jerry Devoe of New York and Tom Kearns of Mayo's described eyes removed from accident fatalities as seen under the microscope. They saw fat emboli in the inner tissues of the eye, the retina and choroid. These had to get there through the circulatory system. How they passed the lungs, nobody knows, because studies show that veins narrow down into capillaries and the capillaries run through the lungs picking up oxygen which then goes into arteries beyond the lungs.

Hughes: *You mean the emboli are too big to pass through the capillaries?*

Duane: Yes. Patients who lie still in bed postop sometimes get clots in their blood (particularly in the legs) which pass up to the lungs and are stopped there. The clots don't go into the brain or eye. These clots in the lung circulatory system are called pulmonary emboli. They can be fatal, and it is a postsurgical complication the surgeon must watch for.

But Purtscher's is something different. These particles are carried from the site of injury by the veins to the heart and into the general circulation, somehow bypassing the lungs. I postulated that maybe these patients have a defect in their pulmonary system so these emboli slide by. I don't know. I'm not an anatomist, and I'm just saying that. Purtscher's disease is something that should be considered when there is distant trauma with pressure, etcetera.

Hughes: *Is it correct to say that one of the points you were trying to make was that these hemorrhages in the retina could be due to this Valsalva effect as well as distant trauma? Purtscher hadn't talked about the rise in intrathoracic pressure as being a cause of retinal hemorrhages, had he? So you were adding to the picture?*

Duane: I was talking about a different thing altogether. Purtscher's is one thing and pulmonary embolus is a cousin of Purtscher's. Valsalva

hemorrhagic retinopathy is a clinical entity. There are cases when the two are combined. At first my colleagues were critical and said maybe I wasn't diagnosing simple Valsalva hemorrhages right.

I was pleased to be at the Bascom Palmer Eye Institute once for grand rounds when Don Gass, one of the leading experimenters in ophthalmology, presented a case. "What's the patient got?" he asked one of the residents, "Valsalva?" The resident said, "No, I don't know what it is but it isn't Valsalva." It did my heart good to hear that reply.

Hughes: *There was quite a discussion after you presented this paper at the AOS. One statement that you made was, "I'm pleased that there has been so much discussion of a nonsurgical subject," which made me wonder whether nonsurgical subjects are often given short shrift.*

Duane: The average ophthalmologist loves surgery. He gets satisfaction out of doing a major or minor operation. Surgeons are very much more doers than they are dreamers or thinkers. I was just putting the needle in them when I said that.

Pseudo-Duane's Retraction Syndrome, 1976

Hughes: *Dr. Duane, in 1976 you published a paper called, "Pseudo-Duane's retraction syndrome."* Please tell me how you became interested in this.*

Duane: Well, I'd heard a lot about Alexander Duane's cases because my name is Duane. This paper was put together by Norman Schatz who was head of the neurology department at Wills. He's a great guy and absolutely brilliant. He knew a lot about Duane's syndrome; knows more about it than I do. The syndrome is usually caused by fibrosis of the lateral rectus muscle, the etiology of which is faulty innervation. Fibrosis makes the muscle stiff. Muscles have to contract. They have to be soft to do their job. The muscle which turns the eye out has to contract to do so. Well, Duane saw these cases–and we've all seen them–and was frustrated because no matter what he tried, the problem persisted. It's a challenge for the neurologists and squint specialists.

In Duane's syndrome, when the patient attempts to look to the side into the field of action of the lateral rectus, the eye not only doesn't go, but as the pair of central muscles contract, they pull the eye back into the orbit. There is also a concomitant narrowing of the lid fissure. Electromyography studies have shown that the problem lies in the nerves to the muscles. Faulty firing of nerve impulses leads to disuse by the muscle and fibrosis.

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* Duane TD, Schatz NJ, Caputo RA. Trans Amer Ophthalmol Soc 1976; 74:122-32.

Schatz got together five cases which superficially looked like Duane's syndrome but which on further study were not so cut and dried. He made a list of the findings which varied among the patients and called it pseudo-Duane's syndrome. It was so interesting to me that I wrote a paper on it with the help of Schatz and Tony Caputo from New Jersey who was doing a neuro-ophthalmology fellowship at Wills. I presented it at an AOS meeting and just for fun added a postscript paper in which I pretended I was having a discussion of the paper with Alexander Duane. This, too, was published in the *Transactions.* It was a lot of fun.

Hughes: *Was there a practical value to the paper?*

Duane: Yes, it pointed out associated problems and other etiologies to be considered in the troublesome treatment of Duane's syndrome.

White-centered Hemorrhages, 1980

Hughes: *The last paper for discussion is on white-centered hemorrhages.* Who are Robert Osher and Richard Green?*

Duane: Robert Osher went to the Rochester Medical School. He was a go-getter, rather manic. He got a residency at Bascom Palmer but had to wait. He came to Wills to fill in the time. He spent most of his time on neuro-ophthalmology sparring with Norm Schatz as there had been no neuro-ophthalmologist on the faculty of Rochester. He was so interested in the subject that he was a gadfly to the neuro residents and could keep up with everybody except Schatz. I decided to have him do a project with me. I had collected a lot of data on white-centered hemorrhages. They're called "Roth spots."

Richard Green was a Wills resident in the sixties. He then spent two and a half years working with Dr. Charles Steinmetz, director of pathology. He lived with the Drs. Keeney in their Chestnut Hill home. Keeney wanted to make him head of pathology but met much opposition to it. Dick went to Wilmer Eye Institute of Johns Hopkins University where he became director of pathology and a professor of ophthalmology.

Hughes: *Why had you collected so much data?*

Duane: I had the inkling that Roth spots had been described wrong in the literature. M. Roth said that the white centers of hemorrhages were made up of bacteria and white and red blood cells, representing embolic abscesses. There was a lot of subacute

* Duane TD, Osher RH, Green WR. White centered hemorrhages and their significance. Ophthalmology 1980; 87:66-9.

bacterial endocarditis in those days over a hundred years ago and up until the antibiotic age. He theorized that emboli broke off from the infected endocardium, passed through the capillaries, and lodged all over the body. In the retina, he thought the bacteria eroded through the tiny vessels, creating an outlet for the white and red cells which then surrounded the bacteria.

Over the years Roth spots were pathognomonic for subacute bacterial endocarditis. Then the Roth name was also given to the white-centered hemorrhages occurring with leukemia. This raised objection from observers who felt that these white centers were due to the large number of circulating white blood cells, so then [the term] "pseudo-Roth spots" was applied here. There did not seem to be a good description in the literature of these lesions. There seemed to be many many diseases in which they were seen. There was confusion as to the causal mechanism. I felt that this would be just Osher's meat, to delve into it and pull it altogether.

I wrote the president of the University of Basel, where Roth had worked as a pathologist, and asked him how Roth saw these things clinically as a pathologist. He wrote back a very nice letter explaining that Roth was a very good doctor and very good pathologist but that he didn't try to be clinical. He simply would make explanations and suggestions by correlating the history which came with the eye specimens of patients expiring with subacute bacterial endocarditis. He didn't realize that there were other conditions in which white-centered hemorrhages were seen.

I happened to mention my interest in white-centered hemorrhages to Dick Green who told me he had several slides of white-centered hemorrhages seen in patients with various conditions. So the upshot was that the three of us came up with this paper which I presented at the annual Academy meeting in San Francisco in 1979. The main feature of our investigations was that we showed the white center to be fibrin and platelet aggregations in cases with etiologies other than subacute bacterial endocarditis or leukemia. It represents a healing process.

Hughes: *Were you three the first to come up with this finding?*

Duane: We discovered that a German doctor, B. von Barsewisch, had published a monograph in 1979 entitled *Perinatal Retinal Hemorrhages** just before we came out with our work, confirming our findings and conclusions. As I recall, he stated that the newborn hemorrhages disappear in something like twenty-four hours, which I find hard to believe. I can't remember if I ever asked my neonatology specialty friends if this is so. White-centered hemorrhages do disappear, however.

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* New York: Springer-Verlag, 1979; 48, 51-2.

Hughes: *Well, do you want to say anything more about white-centered hemorrhages?*

Duane: We proved that they were, for the most part, nonbacterial in origin. There are some that are bacterial. You don't see much subacute bacterial endocarditis now.

Hughes: *Because of antibiotics?*

Duane: Yes, and early diagnosis. I don't know how they treat it, but some way they get ahead of it.

Clinical Ophthalmology

[Interview 8: June 20, 1988]

Hughes: *Please tell me how the idea of* Clinical Ophthalmology *originated.**

Duane: I attended a meeting of the American Academy of Ophthalmology and Otolaryngology in the early 1960s or thereabouts. The meetings were traditionally held in the Palmer House in Chicago. The classrooms were converted bedrooms on the lower floors, and ballrooms were made into exhibit halls. The Palmer House contained the whole thing. Then the meeting began to explode–number of members, production activities, political activities. At first the meetings were designed to augment the education of doctors who are on the line fighting eye diseases.

I used to attend that meeting when I was a resident by thumbing a ride into Chicago from Iowa City. They wouldn't give you a room at the Palmer House if you weren't a member, but they would help to find a room somewhere else. They got me a fleabag someplace. I remember how I used to make a real effort to get to these meetings and take notes and discuss them and argue with them.

Hughes: *From way back?*

Duane: Yes. I still enjoy going to those meetings but don't take the notes I used to.

I was walking around looking at the exhibits at the meeting in the '60s, and I came to the exhibit of Harper and Row. The lady attending the booth turned out to be Eunice Stevens, a vice-president of the company. The latest loose-leaf they had published, *ENT* (ear, nose, and throat), was up on a stand. I looked around at the books, and I couldn't see any ophthalmology. I asked her, "Why don't you have one of these on ophthalmology?" "Because

* Duane TD, ed. *Clinical Ophthalmology*, 5 vols., Hagerstown: Harper and Row Publishers, 1976.

we haven't had anyone offer to write one." I said, "There have to be a thousand guys in the universities. You can go out, pick a worker, and he could do it." She said, "If you feel that way, why don't you do it?" I said, "I'm not with a university. I'm in private practice and I'm not the appropriate person to do it." She said, "I'll take you to lunch." I said, "Okay, we'll go to lunch."

She told me there's no background that you could have that would be ideal. You couldn't train people to be the editor of a book. They're editor and they do it their way. What worked in one place won't work in another. She said, "Why don't you go home and outline what you would have in the way of departments, subdivisions, pictures, how many volumes it would take. I went home and wrote an outline for the proposed *Clinical Ophthalmology*.

Hughes: *Is that what you were calling it then?*

Duane: Yes.

Hughes: *This was 1960?*

Duane: I don't know what year it was.

Hughes: *Were you at Jefferson yet?*

Duane: I think I was approached for the job shortly after that. Anyway, I took my outline to Eunice Stevens at Harper and Row in Hagerstown, Maryland. Then she arranged a meeting with David Miller, president of medical publishing, herself, and me. We met in New York City and talked about loose-leafs and this one in particular. I was lukewarm when I started, but when we got going, I really liked the idea. Dave Miller and I got along right from the start.

Hughes: *Were the ideas for it just coming out of your head or did you go to other loose-leafs?*

Duane: I went to Duke-Elder. He would classify things to the molecule. I took what was good in his work and modified it a lot. Then I went to talk to Miller and Stevens and then I'd take it out to the field. I had guys picked. I asked them to write the section on retinal disease, and so forth. They did. Some didn't write at all. When I first started, I thought I was going to go nuts. I asked for volunteers.

Hughes: *How did you ask for volunteers?*

Duane: I'd write a letter, and if I had to put more pressure on, I'd go to see them.

Hughes: *How were you choosing people?*

Duane: Well, just my judgement on who would be the best to represent the field.

What I wanted was to see how many major subdivisions their section should have. Could they handle that or did they need a subeditor? We would discuss it with their field in mind. Cataracts are different from tumors.

Hughes: *Did you send your contributors a set of guidelines?*

Duane: Yes.

Hughes: *What were you asking?*

Duane: I told them to stay clinical, to state their case, and to give the reader a logical way to think about etiology and diagnosis and treatment of disease.

Hughes: *When you started this project, did you or anyone connected with it have any idea whether a loose-leaf text would go over in ophthalmology?*

Duane: I had no idea. Dave Miller said, "If you write a fresh, catchy book, you'll have the world by the tail. You'll make a lot of money on it." I wasn't in it for the money. I never once asked what I'd make. They can't tell. They know generally. I'm puritanical enough to say I don't think you should write a book for the money.

Hughes: *What were you writing it for?*

Duane: Well, I was writing it because I thought my talents would be right for this, and I would make a contribution in this field.

Hughes: *What talents did you think would be appropriate for editing* Clinical Ophthalmology?

Duane: I didn't itemize them. You have to like to read. You have to like to express things in words.

Hughes: *Duke-Elder was an old man when you were thinking about this book. Was that a factor?*

Duane: Yes. If Duke-Elder was in his prime and was halfway through his series, I don't think I would have taken it on. I thought he'd written a nice, scholarly book on the history and the practice of ophthalmology. He knew a lot of things because he'd look them up and give you both sides. He was a master at this. But he never made any original contributions.

Hughes: *Were you trying to reach a different audience?*

Duane: No. I was trying to reach residents in training and practitioners. I wasn't trying to reach anybody applying to the NIH for a grant. That's another ball of wax. You can't satisfy everybody in one book. You have to pick and choose.

At first we had lots of empty spaces which we thought looked terrible. Soon they were filled. In fact last year we went to Lippincott–they had taken over the publishing of loose-leafs–and asked them to give us another volume. They declined. They said it would cost them $250,000 to launch another book.

Hughes: *You mean another book or another edition?*

Duane: Another volume of the book.

Hughes: *Oh, what was it going to be on?*

Duane: Surgery. That seems to be the burning issue with the younger ophthalmologists.

Hughes: *What was the reception to* Clinical Ophthalmology?

Duane: The greatest reception any publisher had for a book. People stood in line over an hour waiting to get up to the booth at the Academy meeting where it was first presented just so they could order it. The line ran down the hall and guys would not let anybody get in ahead of them. It was as though they were waiting for a movie. The Academy does not allow actual copies of books or other products to be sold at meetings, only orders taken. They had to hire more people just to write the orders, it got so busy. It was really something. Dave Miller was ecstatic.

Hughes: *Did people subscribe to the whole series?*

Duane: Yes, that's the only way it was sold. There were five volumes and an index. When I first talked with Miller I told him we wanted to present the basic sciences first, similar to how ophthalmology residencies used to be set up. Miller said, "I don't think so. The clinical stuff is what the guys want." We published *Biomedical Foundations of Ophthalmology** about eight years later and it never had the audience that *Clinical Ophthalmology* got. It went to residents in training and a few researchers bought it. It explained immunology, microbiology, and other basic sciences that pertain to the eye.

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* Duane TD, Jaeger EA, eds. *Biomedical Foundations of Ophthalmology*, Hagerstown, MD: Harper and Row, 1982.

Hughes: *Do you remember how many copies of* Clinical Ophthalmology *sold that first year?*

Duane: No. Figures like that go right out of my head.

Hughes: *How has it done since it first came out?*

Duane: Remarkably well, even though it has a finite audience.

Hughes: *How many revisions have there been?*

Duane: Four or five.

Hughes: *Who's been responsible for those?*

Duane: Oh, Ed Jaeger, mainly, but all of us. We won't make changes because the author is unhappy with how he worded his article. It's the content from a medical aspect which must be right. We want to keep the information current. It costs about forty dollars to get these revisions.

Tom Duane and Edward A. Jaeger

Hughes: *Has the orientation of* Clinical Ophthalmology *changed in the years it's been out?*

Duane: I don't know what you mean.

Hughes: *Well, I learned from talking with Dr. Jaeger that it's focusing more on surgery because that's the way ophthalmology as a whole is moving.**

Duane: Yes, that's true. They like to talk about it and read about it, to play around with it, but only a certain number will do it. I don't think you learn surgery out of a book anyway.

Hughes: *How does change in orientation occur?*

Duane: We want sections to keep current. If surgery has been found to remedy something, it should be discussed. I think most doctors like to do surgery and when things like radial keratotomy come along it's very enticing. However, we don't want to rush into print about a new surgical procedure which has not been proven to be safe in the long run.

Hughes: *So you're not saying to your authors when you write to them for revisions, "Put in more surgical emphasis."*

Duane: Oh, no.

Hughes: *Do you think money is at the bottom of the current interest in ophthalmic surgery?*

Duane: Maybe, and perhaps egos and desire for status in the community.

Committee Work

Chairman, Section Council on Ophthalmology of the American Medical Association

Hughes: *You were chairman of the Section Council on Ophthalmology of the AMA from 1978 to 1981. How did that come about?*

Duane: Well, the secretary of the Section on Ophthalmology of the AMA before me (he moved on to become chairman) was a fellow by the name of Dud [Goodman M.] Breinin. He was an excellent ophthalmologist; specialized in pediatric surgery at NYU. He spent a whole day sawing on me somewhere that we were having a meeting, telling me how great the AMA is–that it was over a hundred years old, had great traditions, an appointment as secretary to the section was a prestigious one and would be good for my career. So I agreed to do it. It was a lot of work but it was fun.

* Interview with Dr. Jaeger, January 29, 1988.

The ophthalmology section of the AMA, in the days when they had clinical, scientific annual meetings, had excellent programs and was very well attended. When I got to the stage where instead of being the secretary, I would move on to chairman, the AMA decided an annual meeting with all the specialties was impractical. They were going to discontinue the sections and replace them with councils–council for orthopedics, council for ob-gyn, and so on. There was a council for ophthalmology with two officers, a secretary, and a chairman.

George Weinstein, now of Morgantown, West Virginia, and Oliver Dabezies of New Orleans became secretary in that order after me. They didn't have near the work to do that I did because there was no longer an annual meeting. There is now a joint symposium with the Academy one afternoon at the annual meeting. This is held on one subject each year. It, too, is well attended.

I had supervised the death of the section, then became chairman of the council. They were rather political. Meetings to exchange scientific and clinical experiences in ophthalmology were numerous, but the AMA group worried about what was happening to ophthalmologists on the line–surgery, suing, insurance, and so forth.

They gave me the Howe medal because I had done a lot for the section at a critical time.

Hughes: *So it's not by any means an automatic award that the chairman receives?*

Duane: No.

Hughes: *What specifically had you done that they were pleased about?*

Duane: They were enthused that ophthalmology didn't go down the drain when the Section on Ophthalmology stopped having a national meeting. The reason it didn't go down the drain is because I got a bunch of guys together and we saved it. We had our own money. We didn't depend on the AMA. We had an endowment. The AMA wasn't going to let the section have an annual meeting. We didn't care. The Academy has a national annual meeting so we tied onto that. All that I did. That's why, I think, they gave me the medal.

Hughes: *Did the award have anything to do with the fact that you were also the representative to the Section Council from the Academy of Ophthalmology?*

Duane: I don't think so. The Academy wants to have a say in what goes on in the AMA and be closely united with it and I was that representative.

Hughes: *Well, I want to quote to you from a letter from Dabezies which he wrote in June of 1981. "On behalf of the Section Council on Ophthalmology to the AMA, I would like to express our appreciation for all of the work you have performed both as a secretary and later as chairman of the Section Council. You guided us through a rough period and have continued to provide us leadership in our present improved position." The "rough period" was when they were talking about dissolving the section?*

Duane: They didn't talk about it; they dissolved it.

Hughes: *Was it your idea to form this council?*

Duane: Well, the council was in existence. It was just a step above membership. I thought that the section's representative had to be sure that it didn't go down the drain.

Hughes: *In some of the other specialties, the AMA sections died?*

Duane: They died.

Hughes: *Were these deaths because of the growth of the specialty organizations which were competing with the AMA sections?*

Duane: Yes. The AMA was so big we weren't getting anything out of it. When there was a meeting, we had to fight for everything–rooms, food, drinks. It would be a bad time because twenty-five other specialties wanted them, too.

Hughes: *Why did you think it was necessary for ophthalmology to retain ties with the AMA?*

Duane: Well, we had money given to the sections by the AMA and I thought it was good to retain the ties. It is kind of a balance between the Academy, the American Board of Ophthalmology, and the American Ophthalmological Society. It has a place.

Hughes: *What is that place?*

Duane: Representing practicing American ophthalmologists as exemplified by the AMA membership and not having ophthalmology in the whole country run by a small group.

Hughes: *What about political clout?*

Duane: Well, that goes up and down. I'm not much of a politician, and I never paid it a lot of attention. I don't like politics.

Hughes: *I understand that there has been a tendency for ophthalmologists to defect from the AMA.*

Duane: That was never a problem that I was aware of.

Hughes: Does the average ophthalmologist today belong to the AMA?

Duane: I think today he does. I think tomorrow he won't.

Hughes: Why?

Duane: Because I think the section doesn't have enough visibility. A practicing ophthalmologist doesn't care whether there's a good balance at top levels of these institutions. So you're seeing all this slip away.

Member, American Board of Ophthalmology, 1981-1984

Hughes: You were a member of the American Board of Ophthalmology for four years beginning in 1981. Tell me something about the responsibilities of a member of the board.

Duane: Well, that's a very important question. The board is one of the most influential power structures in the whole field of ophthalmology. It's usually manned by people who have high political standing in the field of ophthalmology. Furthermore, they're very industrious, knowledgeable teachers. So I think it's a very important function of medicine at large, and I think they do a good job.

Hughes: When you were a member of the board were there any notable changes or policy decisions made?

Duane: I don't think so. You're supposed to be on the board eight years but I was only on four because of my age and the fact that the Parkinson's disease fatigued me. It is very strenuous physically and mentally to participate in the giving of the boards. People over sixty-five are considered "not with it" compared to younger guys, so there is an automatic cut-off of your services then, except for some extenuating circumstances.

There's no one way of examining people. It's boring if you ask the same questions of everyone. If you ask the same questions, the candidate will pass them along to those who follow, and those taking the exam later in the day get a break that the early bird didn't.

The wives of the board members had a lot to do with helping on the boards when I was on them. Candidates would sit outside the examining rooms awaiting their turn. They would get spastic. The wives would screen them for which examiners they were eligible and try to put them at ease. Often I got letters and telephone calls when the boards were over, thanking Julia.

Hughes: *What were you trying to get out of candidates by your questions?*

Duane: We asked them questions which we figured they ought to know to be a safe ophthalmologist. "Safe" doesn't mean you teach; it doesn't mean you make experimental inroads or take on tough cases. It just means you do the right things in the right order. You are not too smart and you're not dumb. You have been trained.

Hughes: *Is it difficult to pass?*

Duane: Careful records are kept on each group taking the exams. Between 275 and 300 candidates take the complete exam each time it is given, which is twice a year. Two or three percent flunks everything. They can repeat once without retaking the written. Some just fail in one, two, or three subjects. They give them another shot at what they failed the next time the boards are held. The directors work at home and at meetings immediately preceding the start of sessions trying to work out questions that are fair. The big trick is to make the guy think, to show whether he's been exposed to that concept, yet not making the question so hard that he can't answer, that nobody can answer it.

Hughes: *How many examiners are there?*

Duane: During my time on the board it varied from fifteen to twenty. Each director then had three "junior" ophthalmologists who are not necessarily junior in age or experience–just not a director of the board. They are capable diplomates local to the region where the exams are being held, such as San Francisco, Chicago, Philadelphia. Each of the three starts examining a candidate and the board member joins them for the final evaluation. He writes out the grade and any remarks that seem indicated, especially in the case of a candidate who fails.

Hughes: *Did the examiners get together and coordinate their questions?*

Duane: Yes, to a degree. They are doing that now. I talked with Bill Spencer, secretary of the board. I understand that now they ask candidates the same questions at a certain time and they don't have a chance to talk to other people about them. Then they ask a different one to the next group coming in. It's still one candidate being interviewed alone, but it is an entirely different setup. They don't sit around in groups waiting to be examined. They have an appointment for each exam like in a doctor's office.

Hughes: *So the candidate has to go through this fifteen or so times depending on how many examiners there are?*

Duane: No, there were three subjects in the morning and three in the afternoon. In each subject, the candidate would be examined by one

associate and one director, but each subject had about seven directors because of the large number of candidates.

Hughes: *Were you aware of any sort of philosophical shift in that period that you were on the board?*

Duane: Yes, to a degree. When I got on the board, they were in the midst of studying how they could expedite it and get the results out faster. A few times they brought up the question: Shall we have recertification? Ten years down the line after passing the board exams, should they have a small exam? Not one like the initial board exam, but one that shows whether they [board-certified ophthalmologists] are keeping up. And that's pending now. There are bitter feelings about it. I think it's a great idea. I don't have to take it! [laughter] I'm appalled how some doctors handle a case. They're board-certified and have been out twenty-five years. They might even be prominent in their community. They're terrible doctors. But there are a lot of ophthalmologists, good and bad, against recertification.

Hughes: *Why are they against it?*

Duane: Well, they see it as being treated like little kids. If they want to study, they'll study; you can't really make them. And it takes money and time. Taking the boards the first time is very costly and they don't want that again.

The board has suggested that there be a deadline. Everybody who takes the board exams after 1992, for example, will take a recertifying exam. That suggestion was not well accepted.

Councillor, American Academy of Ophthalmology

Hughes: *Well, another position that you had was councillor at the American Academy of Ophthalmology. Why were you made a councillor?*

Duane: Because I was old enough and had done a lot of committee work. I don't like committee work. When I was young I liked it for the prestige. I don't now. What difference does it make, sitting here in this screen house [where some of the interviews took place], whether I had this job or that job? It doesn't make any difference.

Hughes: *But it would make a difference if you were a young man on the rise in ophthalmology?*

Duane: Oh, yes. When I first went to Jefferson, Dr. Francis Adler, whom I got to know well when volunteering at the University of Pennsylvania and whom I greatly admired and respected, took me aside at some national meeting and said, "Tom, you must make a

point to get into the hierarchy of the national eye groups. Do it as early as you can, before you make any enemies." I was somewhat taken aback and replied, "Well, you don't just walk up to them and say take me in." I quickly found out that committee work was the route to take.

Hughes: *Well, what does a councillor do?*

Duane: All they do is look over what the various committees of the Academy have done and what big problems they're still having. For instance, they had an in-depth study on ethics, with lawyers and everything. I've never been convinced that they were going to change an individual's ethics. If a guy is going to cheat, having a couple of courses on ethics isn't going to make a difference. The Academy tries, by setting standards and keeping the lid on loudmouths and by not appointing them as their representatives.

One member of the council was objecting strongly to the appointment of a certain ophthalmologist to an important semipermanent job with the Academy for "ethical" reasons. I had known this man personally for many years and knew he would be good for the job. So the councillors invited him to come and present his case, without accusing him of anything. We discussed it and decided he would be fine for the job, including his ethics.

Hughes: *Do you remember any significant issues in those years that you were there?*

Duane: Yes. In 1978 the American Academy of Ophthalmology and Otolaryngology separated, first into divisions and then into independent societies. That was an important move. We felt that ear, nose, and throat was a natural grouping with which ophthalmology was unrelated. I think the only real thing they had in common was the fact that a patient could be seen in an office without undressing.

I had one problem: A woman who was an executive secretary in a wealthy home in Bethlehem came into my office and wanted to be refracted. I reached a certain point in the exam where I had these frames on her with turnkeys. I gave one of them a quick turn because I wanted a lens the frame held ninety degrees different than it was. Suddenly, the turnkey flew off, hit her in the chest, and went down inside her dress. My first impulse was to dive after it. I caught myself. I told her what happened and told her I'd go out of the room while she looked for it as I needed it. She never did find it. I said, "Well, I'll remember you as the only gal that undressed in my office."

Hughes: *How did the separation of ophthalmology and otolaryngology evolve?*

Duane: At an Academy business meeting in Dallas one year the ophthalmologists talked about all sorts of things. Then there was a lull. They asked if there was any new business and a guy by the name of Lawton Smith stood up. Do you know Lawton Smith?

Hughes: No.

Duane: Lawton Smith is "Mr. Neuro-Ophthalmology." He is at Bascom Palmer. He's something else. He's got a lot of zip, talks fast with a Carolina accent, and is brilliant. He's everything. He's a born-again Christian. Anything he does, he does 180 percent. He remembered reading in the minutes of meetings years and years back that a group of ophthalmologists wanted to break off from ENT. They felt they didn't belong together. There were a lot of ENT doctors that weren't very keen for ophthalmology, either. It wasn't all one-sided. He thought we looked at a dissolution now. Well, after much research on the subject, we broke up into two separate academies. That was that.

Hughes: It wasn't quite that simple, was it? I heard, for example, that there was a problem with how to arrange the money.

Duane: I suppose there was.

Hughes: You don't remember anything about that?

Duane: No. I think that was a technical detail. It's important, but I don't think that came up before the group for planning.

Hughes: Well, apparently there was a quibble with the otolaryngologists about who should take what money and how much.

Duane: Yes, when they broke up, considerable money was lying around but I don't know how it was divided. The combined Academy had one secretary, an ENT guy, I believe from Mayo's, who was a nice enough guy, but we didn't think he represented ophthalmology. When we took a vote which indicated we wanted to split off, there were threats of lawsuits, which never materialized.

Hughes: Were there any problems in organizing the Academy?

Duane: We decided that Mayo's wasn't a good place for the Academy's headquarters. Bruce Spivey became our executive secretary, and the Academy went to San Francisco.

Hughes: Why wasn't Mayo's a good place?

Duane: It's cold for a long part of the year. It's not easy to get there. It's not on the road to anything, you know. It's a wonderful institution

and the doctors are good. I like it fine, but I don't want the secretary of the Academy up there.

Hughes: *Were there any other significant changes?*

Duane: Well, yes. There was a large organized group of ophthalmologists in the U.S. who had never taken or did not pass the board exams. At that time, to belong to the Academy, to have a vote and be privy to its business, an ophthalmologist had to pass the exams of the American Board of Ophthalmology. There were some 300 members of this group which called itself the American Association of Ophthalmology and had its headquarters in Washington, D.C., with a secretary and president. They said they were organized to handle politics, that the average doctor didn't know politics, and when he represented the Academy, he made a fool of himself. We thought it wasn't good for American ophthalmology to have two groups of doctors not necessarily agreeing with one another. We thought it would be much better to have those doctors join us in some manner. We knew it would be breaking the rules of how one became a fellow of the Academy legitimately. Any doctor can attend the annual Academy meeting; he just can't participate in teaching, scientific exhibits, business meetings, and voting.

An Academy committee of which I was a member was formed to study the issues. We met several times with the top people from their group. They were interested in joining with us, for economic reasons among other things–maintaining an office in Washington was very costly for them. We pointed out to them that they would have a lot more clout for their causes backed by 15,000 guys instead of 300. Our overall views were not that different. The upshot was that they did join us.

Member, Association for Research in Vision and Ophthalmology

Hughes: *You've also been a member of the Association for Research in Vision and Ophthalmology. Do you know the history of the group?*

Duane: Yes. The organization is a group of basic scientists, but not exclusively basic scientists. It's divided into various research areas, and it has a good membership that is enthusiastic for their organization. They put on a good show. They usually meet in Sarasota, Florida, during the late winter. Most of the researchers of the country are there and it's a good place to get ideas and talk.

Hughes: *Are the papers high quality?*

Duane: Well, there are some that aren't, but the majority are. They put out their own journal. It's a worthwhile meeting, but it has become awfully large. It's not the intimate meeting it used to be.

Hughes: Do you know when and who founded the association?

Duane: Don't hold me to it. I think Jonas Friedenwald, who was an ophthalmic pathologist from Johns Hopkins, was the leader in forming it. I can't remember when.

Member, Association of University Professors of Ophthalmology, 1962-1981

Hughes: You were also a member of the Association of University Professors of Ophthalmology. What is that group?

Duane: Well, one year we went up to Chicago to have a meeting to see if we could unite the medical schools and their deans so that we could make a unified pitch for ophthalmology education. I really enjoyed that group. We met once a year in various places. They were very stimulating.

Hughes: Are either the Association for Research in Vision and Ophthalmology or the Association of University Professors of Ophthalmology considered important for a person who has ambitions to rise in ophthalmology?

Duane: Yes, but not compared to the Academy or the AOS, and of those two, the Academy is by far the most important.

Hughes: When would you say that the Academy became the most important ophthalmological organization?

Duane: Around the middle twenties.

Hughes: Really, that early, while it was still part of otolaryngology?

Duane: Yes. Of course, the Academy has made tremendous strides in the past ten years since breaking away from ENT, but it has long been *the* group for ophthalmologists.

Hughes: And yet the AOS has the prestige?

Duane: Yes, the AOS is an elite organization. And I like it. I don't like the snobbery connotation. I like the opportunity to discuss any paper. I like the parties and general atmosphere at The Homestead where most of the meetings are held. (Once we went to Hawaii which was fantastic–our first and only visit there–it is just a little far to go from the East Coast.) My friends are there. We relax. You don't have to rush around like you do in some hotels. It's quiet. The

birds are chirping. All's well with the world down there–once you get there. It's in the mountains in Virginia and not that easy to get to for most members, especially from the far west.

Member, Residency Review Committee for Ophthalmology of the Liaison Committee of Graduate Medical Education, 1976-1980

Hughes: *What organization was this?*

Duane: It had multiple representation. The Academy sent delegates and the American Board of Ophthalmology, and the AMA, and I can't remember who else. We visited about eight residencies a year. The ophthalmologists would each divide these up. If the residency was very small, only one person would evaluate it.

It was a committee which sent standards for an eye residency. The committee as a whole reviewed each report and decided whether or not such and such a residency was functioning adequately. If they did not meet the standards, they had a certain amount of time to get with it. If they didn't get with it, they would no longer have an accredited residency. This meant a great deal to them in dollars and cents as well as being able to give doctors training in ophthalmology. Trainees would no longer apply for positions with them and the hospital staff would be left to do everything on their own. It was a powerful committee. Sterling ophthalmologists were on it. Bill Spencer was chairman and Tom Kearns secretary-treasurer.

Hughes: *Was the committee something that the ophthalmologists formed?*

Duane: I don't know who formed it.

Hughes: *Was there any relationship with the American Hospital Association?*

Duane: Yes, to some degree. They usually preceded us, but they evaluated how a hospital functioned in general, from food preparation to medical record keeping to mortality rates to state of equipment, etcetera. They were not concerned with how a specific residency was conducted. The hospital in general would or would not receive accreditation, and the residencies would be affected thereby. Then each residency would have to measure up to the "special" review standards.

Member, American College of Surgeons

Hughes: *One organization I left out is the American College of Surgeons. Do you remembers when you became a member?*

Duane: It was in Bethlehem; I think in 1951 or '52.

Hughes: *Why did you join?*

Duane: Because I was eligible and it was a prestigious group.

Hughes: *Why was it important for an ophthalmologist in private practice?*

Duane: It probably wasn't in private practice but for an ophthalmologist who wanted to keep up and set surgical standards in his community it seemed important.

Hughes: *What role did ophthalmic surgeons play in the ACS?*

Duane: Not much really. There were sections for the various surgical subgroups, which presented their own papers at the annual meetings. I think there was an occasional ophthalmic surgeon in the governing group.

Surgery has changed rather dramatically since I started practice. Cataract patients stayed in the hospital ten days postop with sandbags holding their head in position and bed pans having to be used for elimination. It was dreadful. They had more complications than when they operated them on the go. There was an eye doctor in New York City during the war. He was at Columbia and couldn't get hospital beds because the military was using them all. He got mad and started operating in hotels. He got fewer complications than when he put them in a bed in a hospital. So that is part of the story of outpatient surgery development. Today in eye it's practically all outpatient surgery.

Hughes: *You said before that when you were involved in the design of Wills Eye Hospital that you really didn't anticipate the growth of outpatient surgery to such an extent.*

Duane: That's right. I missed the boat.

Hughes: *Were there any signs to read at that point?*

Duane: No, nobody deliberately ignored the trend.

Hughes: *Oh, I know. You say you missed it, but maybe it was inevitable?*

Duane: Well, they built a new hospital at Richmond, Virgina, across the street from the university and connected it with a tunnel. About two-thirds of the first floor is all operating rooms. So they take your hat and coat, get your insurance number, put you on a cart, and send you in.

Hughes: *So they were anticipating a shift to outpatient surgery? Was that about the same time as the new Wills was built?*

Duane: Yes. That sort of stings!

Hughes: *I read that you were a member of the Advisory Council for Ophthalmic Surgery for the ACS from 1980-1982.*

Duane: Well, as usual I voiced my opinion over something and that caught their attention. The executive secretary was Rollo Hanlon, an old friend of Julia's brother, a general surgeon in Kentucky who had trained at Cincinnati as did Hanlon. I had known Hanlon during my stint with the AMA, and we respected each other's opinion. He was probably responsible for my appointment.

Hughes: *Well, is there anything more you want to add about committee work?*

Duane: No, except to say what Dave Cogan said, "Committees are designed to take minutes and spend hours."

Hughes: *Did you enjoy serving on these various committees?*

Duane: Yes, some.

Honors

Hughes: *Well, we mentioned the two Howe medals. Were there any other awards?*

Duane: Oh, I've received various awards. I can't think of them.

AMA Howe Award 1982; Robert D. Reinecke, Thomas D. Duane, Whitney Sampson, Marshall Parks

Hughes: *Julia mentioned a fairly recent award from one of the medical societies in Philadelphia. Do you know what she was referring to?*

Duane: She's referring to the Ophthalmic Club of Philadelphia. I never joined. When I came to Philadelphia as head of ophthalmology at Jefferson, everyone descended on me wanting me to join their organization–statewide, citywide, and United Stateswide. I started acquiescing, and one day I took a survey of what I was doing. I was on the road too much. I was neglecting my job. (This was after I finished the survey. I had had to get the dean's permission to do that, as you can imagine.) I just said I wouldn't join any more societies. So the Ophthalmic Club of Philadelphia made me an honorary member. I'm not the only one, but I don't know the reason for the others. The club wanted to give a prize to a guy who'd done most for ophthalmology. They give one annually. That time they gave it to me. It is a plaque to hang on the wall.

The Thomas D. Duane Ophthalmological Society

Hughes: *Would you tell me how the Duane Society came about, please?*

Duane: The wife of one of the residents at Wills was an RN who had continued to work in addition to giving birth to two little girls while her husband was in medical school. She decided that while he took a residency and a fellowship, she would go to medical school. So she applied for it at Jefferson and was admitted. Her name is Melissa Brown. She was an excellent student and I used to talk with her a lot. They came out to our home in the summer to swim. Julia and I admired her a lot. She was a good little manager, vivacious, and a worker. Spinal surgery a few years back had not slowed her down in the least. They took on nannies from Ireland to help with the house and children, which was another big undertaking.

She decided in her freshman year that a lot of the medical students didn't know how great ophthalmology was, and she with her husband Gary founded this group, which they chose to name the Thomas D. Duane Society. They asked if it would be all right with me and as you might expect, I said "yes." They then went to the dean and the executive council and received formal acceptance of the group. They meet about five times a year and hear about what ophthalmologists do, what's going on in ophthalmology, how to get a residency, where to look for a residency, etcetera.

Hughes: *Who goes to the meetings?*

Duane: Medical students.

Hughes: *Who talks to them?*

Duane: They invite someone from ophthalmology for dinner and have him talk informally. They have a faculty advisor, too, but I don't know who it is. I don't go to their meetings. I wouldn't feel comfortable.

There is also a Thomas D. Duane research fellow in the summer.

Hughes: *Funded by the society?*

Duane: No, I don't think it has any connection with the society other than members being logical candidates. A committee appointed by the dean picks a candidate for the position.

Hughes: *Where does the money come from?*

Duane: I believe there is a fund for each medical department from the medical school to be used at the dean's discretion. It's a healthy stipend.

I was walking by a door over at the medical school one day and someone said, "These people are lined up to see if they got the Duane scholarship." I said, "What the hell is that?" My friend Dean Gonnella clued me in.

Hughes: *Do you know if either the scholarship or the society or both have been successful in interesting medical students in entering ophthalmology?*

Duane: I'll tell you, Sally, there is already much competition to get into ophthalmology. We've been having 300 applications for twelve places in the residency program at Wills the past few years. But just this past year they tell me that the number of people wanting to go to medical school is dropping nationwide.

The Thomas D. Duane Chair for Ophthalmology Research

Hughes: *When was the Duane Professorship founded and who was behind it?**

Duane: Julia tells me that Philip Geetter, a former resident from Jefferson now in private practice in Sellersville, Pennsylvania close by where we live and on the active staff at Wills along with Ed Jaeger, and Dean Gonnella hatched the idea at a celebration of Geetter's tenth year of practice, held at his home in Doylestown.

* The Duane Professorship was established in 1987 at Thomas Jefferson University.

Phil was almost a drop-out from medical school in his junior year. He talked at length with my longtime friend, Joe Gonnella, at that time an associate dean with a special interest in medical education. Joe called and asked me to take Phil under my wing. He was a very bright boy, a warm caring person who would make a fine physician. He just needed something to catch his interest. Phil worked a year with us in our lab, went back and finished his medical school requirements to graduate, took an internship in California, and returned to us for his eye residency. He is a superb person and physician. It's no surprise to me that he has been very successful in his private practice. We remain close and I have had no hesitation in referring many friends and acquaintances in the community to him for the gamut of eye care. He credits me with his success but the credit is his.

To get back to the professorship–these three got the ball rolling and through contributions from ex-residents from both Jefferson and Wills, faculty, and friends, a million dollars was raised within a year to establish a chair. I was really surprised and a little proud that it could be accomplished so rapidly.

Hughes: *Dr. Duane, who is the first Duane Professor?*

Duane: Larry A. Donoso, a boy from the Midwest who has training in the basic sciences up to a PhD and has completed a residency and fellowship in retina and is a well-versed clinical and research ophthalmologist. A committee picked him. He's very popular around Wills. They don't have much space, but they are giving him quite a bit, relatively speaking. He's just a very conscientious guy. He's not married. He works hard, does good work, asks good questions, and is a credit to the institution.

Hughes: *What type of research is he doing?*

Duane: He's doing retinal research because his background has all been in retina. But he has his finger on a chemical he's isolated from eyes that have uveitis. That's inflammation of the colored part of the eye. He's been able to identify it, trace it, and treat it. I don't know the details, but I know that he's impressed the retinal service physicians in our hospital.

Roles Within Ophthalmology

Hughes: *Dr. Duane, what do you consider yourself first and foremost, a clinician, a surgeon, a researcher, a teacher, or an administrator?*

Duane: Probably a teacher and investigator.

Hughes: *Did you ever feel that there was a conflict between those roles?*

Duane: No. You can't do everything and I'd be sick of doing one thing all the time. So I was a good surgeon. I was a good diagnostician. I mean passable–a lot of guys are good.

Hughes: Did you like seeing patients?

Duane: Up to a point. You get a lot of interesting experiences as a result of seeing John Q. Public come through your office.

Hughes: Could you say something about the type of relationship that you tried to establish with your patients?

Duane: Well, Sally, I'm going to surprise you. I usually told my patients to keep quiet. I think ninety percent of the diagnoses that we made were without the patient saying a word. The other ten percent–there are some cases where the history's absolutely necessary. I'm not saying that you don't need histories at all. That's not true, but histories are often long, confused, irrelevant.

I like clinical medicine. I like to teach. My dad always told me, "If you want to make an impression on this field, just make single, accurate observations."

Hughes: Are you aware of any tension between ophthalmologists that are primarily surgeons and those that are primarily medically oriented?

Duane: No, I haven't seen much.

Hughes: You don't think that's a problem?

Duane: I think there's a problem accepting the behavior of some ophthalmologists (they're all over the country) who highly advertise to do ophthalmic surgery and send out vans to bring patients in, etcetera. Do you classify that to be tension between the surgically oriented and the medically oriented ophthalmologist?

I also fear if ophthalmologists make surgery too big a part of their practice, they will begin to think with the end of their knives. That would be detrimental to general ophthalmology. Surgery isn't that tough. Surgery is meticulous and it's demanding and you have to stay with it. A whole lot of guys can be taught how to do it if they're dexterous. I'm not as impressed with the surgeons as they are with themselves.

Hughes: If you were a young man today, would you still enter medicine?

Duane: Probably not. Federal support of medical care with no more private practice will change everything if it comes through. Government controls in place right now are disturbing. Too much of the doctor's energy goes into paperwork. He can turn it over to aides but he still has to be concerned with it. It doesn't encourage the patient to

have more respect for the doctor just because the patient feels that at least the medical bills don't have to come directly out of his pocket. Government controlled doctors will not have any incentive, unhappy though they are with the system today. Certainly something must be done about costs of medical education, health insurance, hospital charges, and doctors' fees–they're all tied in together–but government controls are not the route to take. Once you choose that road, you can't turn around and go back. It's like taxes. They only go in one direction–up.

Hughes: *Do you think medicine can do anything against this trend?*

Duane: They can stall it, hold it off, but I don't think they can prevent it from coming down the pike.

Hughes: *You spoke of, and I quote, "...a natural antagonism between academicians and clinicians." Do you remember what you were thinking about when you wrote that? I don't have the actual reference with me.*

Duane: Not exactly. Clinicians–those in private practice–have a tendency to feel that academicians–those in research or who are teaching clinical skills–tend to look down on their colleagues to a degree for not keeping up on the latest or being just interested in making money. Clinicians feel left out of decision making as regards teaching policies. They feel that they are out in the real world hacking it out, while the full-time researchers and clinical teachers are comfortably supported by the medical school without the worries of practice. This is a very real problem in some medical school areas. The two groups are stand-offish.

There can also be a problem between researchers and clinical teachers in the medical school, usually over money. They also sometimes have a different orientation to subject matter. The researcher may make an ass of himself sounding off at a clinical medical meeting, but then the clinician can, too, if he is not thoroughly familiar with a subject. Both are necessary for the medical schools and residencies.

Hughes: *The growth of the subspecialties within ophthalmology has been something that has occurred within your professional career. Do you have an opinion about this?*

Duane: This has been the pattern in all of medicine since World War II. There has been such a burgeoning of knowledge in all of science that no one can know everything.

Hughes: *Do you think there's any danger because of these subspecialties, in losing the overall picture?*

Duane: I don't think so. They're sharp guys. I don't know what's going to happen. I don't know what attributes would be best for an ophthalmologist.

Hughes: What did you think about when you used a new drug or a new procedure for the first time?

Duane: Well, I trust the testing they do of drugs before physicians can use them and never worried much. I figured if it had gone through the FDA [Food and Drug Administration] and they okayed it, I wouldn't be likely to find something different. Of course, one must always be on the lookout for individual drug sensitivity.

Hughes: What criteria did you use to set your fees?

Duane: What the other guys were charging.

Hughes: It's as simple as that?

Duane: We used to charge twelve dollars for a general eye examination, which always included a refraction because you don't know how well the eye can see until you've made sure it can see better with proper geometry. Today the same exam brings forty-five or fifty dollars. Every procedure is proportional and you can easily run the bill up to a hundred bucks. Of course, this was twenty years ago. When I became head at Jeff and Wills, my fees were much higher but probably much less than some of my peers. I really didn't like the business end of practicing medicine. I just couldn't charge friends and relations and colleagues or their families.

Hughes: In 1972 you gave an address to the freshman medical class at Jefferson on complementarity. Could you summarize that address?*

Duane: Yes, I was saying that there is no specific single way of learning how to treat patients. It's necessary that you know what can be done chemically and physiologically to put them in a better situation. The other thing is to make them relax. That is the art of medicine. If you want to be a good doctor, you've got to do both. You can't just go into the room and dictate, pontificate, say a few words, and walk off. However, you wouldn't hold their hand and talk to them all day when, if you gave them a shot of penicillin, it would cure them. That's what I was shooting at. I wanted the students to recognize they have to do both as doctors.

I had a lot of mileage out of that talk. I liked it, the students liked it, and the faculty liked it. I sent it to *Argus*. Bruce Spivey said if I

* Complementarity: The quintessence of medical practice. The unpublished typescript is on deposit at the Academy.

had sent it a couple of weeks earlier, he would not have written his article on the modern approach to the patient.

Hughes: *Would you care to comment about the major trends and changes in ophthalmology over your career?*

Duane: Yes. I think technology has provided us with superior diagnostic instruments. With automation you can turn some dials and find a patient's refractive error. It eliminates, does he see better with lens #1 or #2? It's not quite that simple, but it's damn near that. You can refract in a matter of seconds as opposed to fifteen minutes listening to, "Yes, no, I don't know whether it's better this way or that way." I hated that but you had to do it. They have ways of bouncing air off the cornea and getting intraocular pressure. One used to have to use a corneal anesthetic and have the patient lie with his head back to get the pressure.

New methods of diagnosis such as fluorescein angiography, electron microscopy, improved photography, new methods of surgery, such as intraocular lens implants, laser treatment of retinal lesions, ambulatory surgery, have made for better prognosis and much more satisfied patients. It has all made a big impact on the science and art of medical practice.

From that standpoint, I wouldn't mind going into practice again.

Shakespeare

Hughes: *How did your interest in Shakespeare evolve?*

Duane: I didn't get much chance to read anything but ophthalmology when I was in my residency. There were only a few books to read on the subject and I read them cover to cover. I did it for two reasons: I wanted to be a good doctor and researcher, and I wanted to know what was known. If I was going to be an ophthalmologist, I might as well find out what it was all about. You'd be surprised at the number of guys that go into specialties that don't train themselves. They just call themselves gastroenterologists or cardiologists and they usually don't know what the hell they are talking about. I didn't want to be like that.

When I finally got my boards, I decided I was a humanities nothing. I hadn't read many great authors. So I started on a campaign to read what I thought was the good stuff. I talked to professors of English and a lot of erudite people, and I got organized. I read Shakespeare, Dostoevsky, Joyce–Shakespeare and Joyce were my favorites–I read a little Dickens and sundry other things. I took a course on English literature on T.V. early in the morning called "Sunrise Semester," which was great. I loved Shakespeare. The more I read of his and found problems connected with him, the

more I knew about him. I went to Oxford one summer and took a course there. I also took one at Harvard.

I finally had a chance after I retired to teach a course in Shakespeare. The course is for senior citizens and is continuing education for all of us. I really just lead the group. Everybody chips in and contributes their thoughts. It's a two-hour session one morning a week, weather permitting, for ten weeks.

Hughes: *Where do you give the course?*

Duane: At the Delaware Valley College in Doylestown, twelve or thirteen miles from us. It is a very nice small four-year college which started out as an agricultural school. I'm really impressed by the younger students on the campus. They seem to be such a wholesome bunch.

Shakespeare didn't just write plays as single entities. He wrote certain ways at a certain age. His thoughts, to be understood, have to be read sometimes in three plays. He wrote fast as hell. He was an actor, also a financier. He cared about politics and was a great observer of people. He wouldn't erase what he wrote or tear it up and write it over. He would go down into the basement of theatres and write with a quill pen. He made no corrections. He set style, changed thinking, and he was just an outstanding artist.

I like his philosophy. There is a group which thinks that he was a fake, that somebody else wrote the plays. They'll never convince me of that. There was only one Shakespeare.

Contributions

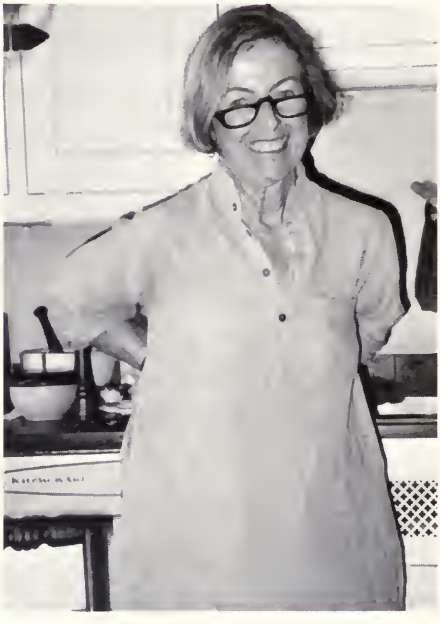
Hughes: *Dr. Duane, a final question: What do you consider to be your greatest contribution?*

Duane: [pause] Hard to say. I don't know. Does everybody have trouble with this question? I guess the best contribution I made was to play the game within the limits of propriety and be honest, hard-working, fair. I don't think the discoveries I made are great. They are good for a clinician, but they don't compare with landmarks in medicine. My teaching didn't either except for *Clinical Ophthalmology*–one of the best things I ever did.

I heard very often after I left Jefferson and Wills that if anyone had a gripe or worry or anything, if it was something they wanted to talk over, they felt they could always come to me and talk it over. I would give them a straight answer or an opinion which they might or might not like but it was the way I thought most likely things would turn out.

Also, we generated a pleasant spirit in the department at Jefferson and at Wills. Telephone operators liked the janitors, janitors liked the nurses, nurses were nice to the patients, security was happy and friendly–it was just a good place to be. There were smiles and laughter all down the line. They'd call you by name. I guess the spirit that I helped instill in the Wills Eye Hospital was about as good a contribution as I could make.

Tom
June 1981



Julia
June 1988

APPENDICES

CURRICULUM VITAE

Name Thomas David Duane, MD

Date of Birth October 10, 1917

Place of Birth Peoria, Illinois

Nationality U.S. Citizen

Education	Degree	Year
Harvard University	B.S.	1939
Northwestern University	M.D.	1943
Northwestern University	M.S.	1944
State University of Iowa	Ph.D.	1948

Professional Experience

Vice-Chairman, American Board of Ophthalmology, 1984

Chairman, AAO Nominating Committee, 1982

Consulting Surgeon, Wills Eye Hospital, Philadelphia, 1981-

Member, American Board of Ophthalmology, 1981-1984

Chairman, Committee on Thesis, American Ophthalmological Society, 1981-1982

Member, Advisory Council for Ophthalmic Surgery, American College of Surgeons, 1980-1982

Member, National Advisory Eye Council of NIH, 1978-1981

Chairman, Planning Subcommittee of NEI, 1979

Chairman, Melanoma Task Force, NEI, 1979

Councillor, American Academy of Ophthalmology, 1979-1982

Member, Residency Review Committee for Ophthalmology of a Liaison Committee on Graduate Medical Education, 1976-1980

Trustee of Seeing Eye, Inc. 1975-1980

Ophthalmologist-in-Chief, Wills Eye Hospital, Philadelphia, 1973-1981

President of Staff, Thomas Jefferson University Hospital, 1970-1973

Consultant in Ophthalmology, Lankenau Hospital, Philadelphia, 1967-1982

Consultant in Ophthalmology, VA Hospital, Wilmington, 1967-1981

Consultant in Ophthalmology, Wilmington Medical Center, Wilmington, 1967-1975

Chairman, Department of Ophthalmology, Jefferson Medical College, Philadelphia, 1962-1981

Professor and Chairman, Department of Ophthalmology, Jefferson Medical College, Philadelphia, 1962-1982

Consultant in Ophthalmology, VA Hospital, Philadelphia, 1962-1966

Research Study Director, Research to Prevent Blindness, Inc. 1962-1965

Research Associate, Department of Ophthalmology, Medical School, University of Pennsylvania, 1960-1962

Associate, Department of Ophthalmology, University of Pennsylvania Medical School, 1960-1962

Private Practice, Bethlehem, Pennsylvania, 1953-1962

Associate, Department of Ophthalmology, Graduate School of Medicine, University of Pennsylvania, 1953-1960

Associate, Department of Physiology, University of Pennsylvania Medical School, 1952-1954

Instructor, Oak Ridge Institute of Nuclear Studies, Spring 1953

Private Practice, Bethlehem, Pennsylvania, 1949-1951

Instructor, Department of Physiology, State University of Iowa Medical School, 1947-1948

Honors

Fellow, American College of Surgeons

Diplomate, National Board of Medical Examiners

Diplomate, American Board of Ophthalmology

Diplomate, American Board of Preventive Medicine

Howe Medal, Ophthalmological Section of AMA, 1981

Howe Medal, American Ophthalmological Society, 1988

Sterling silver charger, Executive Council, Thomas Jefferson University College of Medicine, 1981

Sterling silver charger, Wills Eye Hospital Society, 1981

The Thomas D. Duane Ophthalmological Society, established 1983

Thomas D. Duane Professorship, Thomas Jefferson University, established 1987

Zentmayer Award, Philadelphia Ophthalmic Society

Outstanding Ophthalmologist Award, Philadelphia Ophthalmic Society, 1986

Memberships

Chairman, Section on Ophthalmology, American Medical Association
American Academy of Ophthalmology and Otolaryngology
Association for Research in Ophthalmology
Sigma Xi
Aero-Space Medical Association
American College of Preventive Medicine
College of Physicians of Philadelphia
American College of Surgeons
Association of University Professors of Ophthalmology
American Ophthalmological Society
National Advisory Eye Council of National Institutes of Health
American Academy of Ophthalmology
Trustee, The Seeing Eye, Inc.
American Association of Ophthalmology
Council for Ophthalmic Surgery, American College of Surgeons
American Board of Ophthalmology

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BOOK REVIEWS

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2. Duke-Elder S: Diseases of the Uveal Tract. *System of Ophthalmology*, Vol IX. (Duane TD, *Sur Ophthalmol*, 13:54-55, 1968.)
3. Watson JD: *The Double Helix.* (Duane TD, *Sur Ophthalmol*, 13:173-174, 1968.)
4. Harris S: *Banting's Miracle.* (Duane TD, *Sur Ophthalmol*, 13:174, 1968.)
5. Duke-Elder S, Dobree JH: Diseases of the Retina. *System of Ophthalmology*, Vol X. (Duane TD, *Sur Ophthalmol*, 13:306-308, 1969.)
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11. Goldberg MF, Fine SL, eds: *USPHS Symposium on the Treatment of Diabetic Retinopathy.* (Duane TD, *Sur Ophthalmol*, 14:342-343, 1970.)
12. Caird FI, Pierie A, Ramsell TG: *Diabetes and the Eye.* (Duane TD, *Sur Ophthalmol*, 14:343-344, 1970.)
13. Kimura SJ, Caygill WM, eds: *Vascular Complications of Diabetes Mellitus, with Special Emphasis on Microangiopathy of the Eye.* (Duane TD, *Sur Ophthalmol*, 14:344-345, 1970.)
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27. Crichton M: *Five Patients: The Hospital Explained*. (Duane TD, *Sur Ophthalmol*, 15:336, 1971.)

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35. Kolker AE, Hetherington J, eds: *Becker-Shaffer's Diagnosis and Therapy of the Glaucomas.* (Duane TD, *Sur Ophthalmol*, 16:114-115, 1971.)

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37. Hugonnier R, Clayette-Hugonnier S: *Strabismus, Heterophoria, Ocular Motor Paralysis: Clinical Ocular Muscle Imbalance.* (Duane TD, *Sur Ophthalmol*, 16:175, 1971.)

38. Fonda G: *Management of the Patient with Subnormal Vision.* (Duane TD, *Sur Ophthalmol*, 16:176, 1971.)

39. Sorsby A: *Ophthalmic Genetics.* (Duane TD, *Sur Ohthalmol* 16:176, 1971.)

40. Smith JL: *Spirochetes in Late Seronegative Syphilis: Penicillin Notwithstanding.* (Duane TD, *Sur Ophthalmol*, 16:176, 1971.)

41. Thomas CI: *Medical Examination Books: Vol 15 Ophthalmology.* (Duane TD, *Sur Ophthalmol*, 16:176, 1971.)

42. Cant JS, ed: *The William Mackenzie Centenary Symposium on the Ocular Circulation in Health and Disease.* (Duane TD, *Sur Ophthalmol*, 16:176, 1971.)

43. Sloane AE: *So You Have Cataracts: What You and Your Family Should Know.* (Duane TD, *Sur Ophthalmol*, 16:177, 1971.)

44. Rodger FC, Sinclair HM: *Metabolic and Nutritional Eye Diseases.* (Duane TD, *Sur Ophthalmol*, 16:177, 1971.)

45. Smith B, Cherubini TD: *Oculoplastic Surgery: A Compendium of Principles and Techniques.* (Duane TD, *Sur Ophthalmol*, 16:177, 1971.)

46. Bartley SH: *Principles of Perception.* (Duane TD, *Sur Ophthalmol*, 16:177, 1971.)

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